

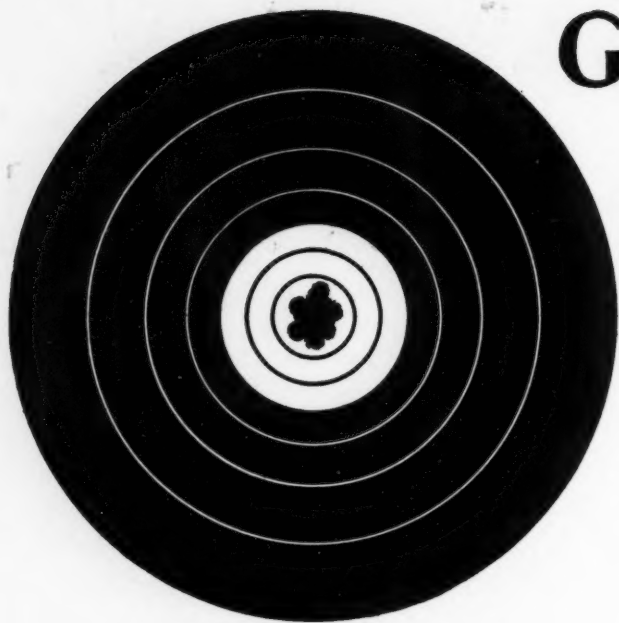
The AMERICAN RIFLEMAN



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The National Rifle Association of America
Incorporated 1871

SEPTEMBER, 1930

25 CENTS



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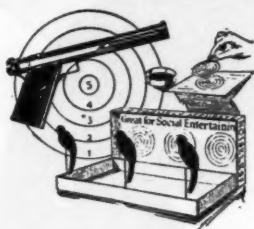
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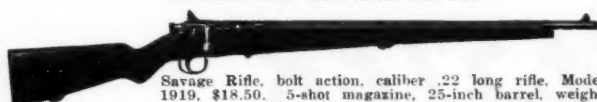
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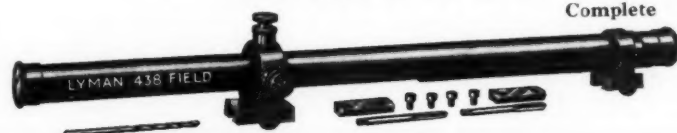
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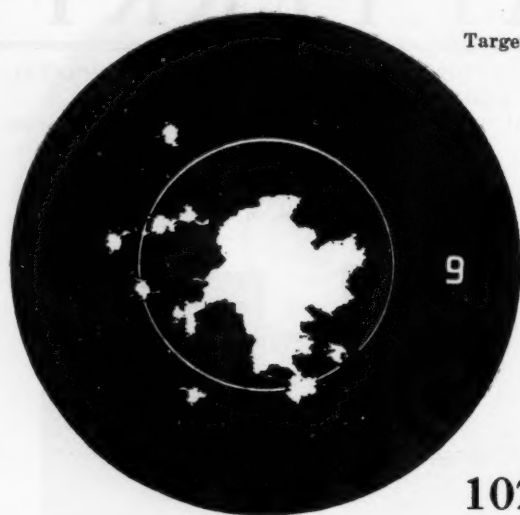
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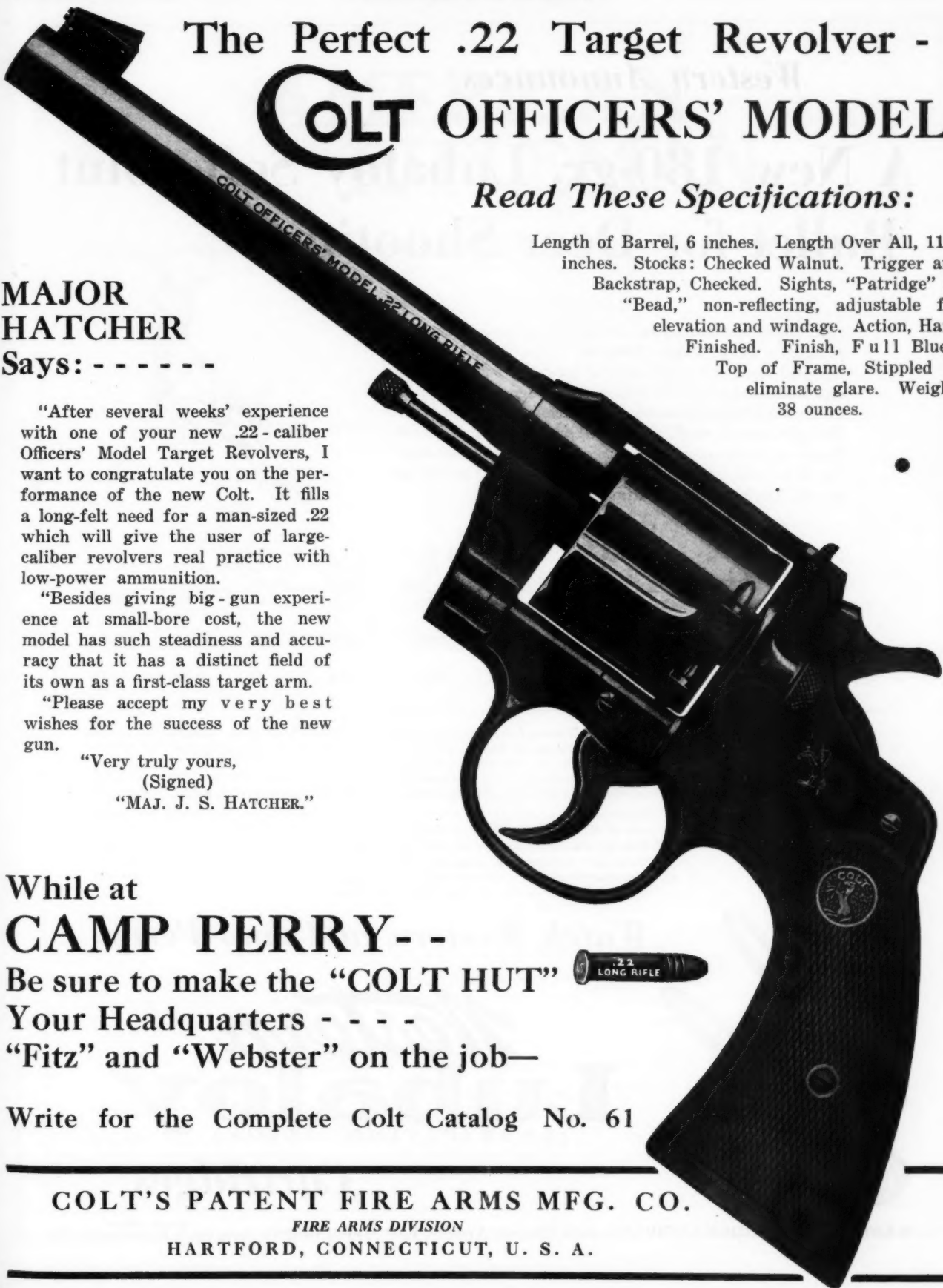
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Western Announces

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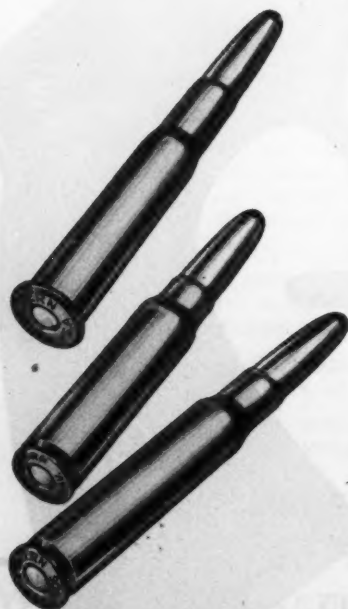
	Velocity, F. S.		Energy, Ft. Lbs.		Trajectory in Inches			
	At Muzzle	At 100 Yds.	At Muzzle	At 100 Yds.	100-Yd. Range	Midway of 200-Yd. Range	300-Yd. Range	500-Yd. Range
30-06 Springfield	2645	2381	2800	2263	0.69	3.05	7.72	27.36
180-Gr. S. P.								
30-40 Krag	2467	2216	2437	1970	0.79	3.53	9.04	31.52
180-Gr. S. P.								
300 Savage	2375	2130	2250	1813	0.84	3.76	9.64	34.35
180-Gr. S. P.								

In this new WESTERN Lubaloy cartridge another outstanding ammunition development has been accomplished by the same group of ballisticians which gave the shooting world the famous WESTERN Open-point Expanding and Boat-tail bullets.

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.38 Special Super Police cartridges. Non-fouling Lubaloy .22's are preferred by small-bore shooters everywhere. All WESTERN center-fire and rim-fire cartridges are non-fouling. CLEAN ammunition!

If you would like to have further information about the new 180-gr. Lubaloy Soft-point bullet for deer shooting or other game, our technical staff will be glad to tell you about it or help you with any difficult shooting problems you may have.



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Western Lubaloy

(LUBRICATING ALLOY)

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EDITORIAL

The Argentine Cup Comes Home

FOR THE first time since 1924, a victorious American Rifle Team has just returned to the United States. Our team beat the Swiss decisively in the 1930 International Matches at Antwerp, and once again regained possession of the celebrated Argentine Cup, emblematic of the World's Free Rifle Championship.

Under Major Boles as captain, who himself is a veteran of many International Matches, and favored with the best equipment money could provide, the United States Rifle Team this year sailed confident of victory. How well this confidence was justified is evidenced by a comparison of the American and Swiss scores contained elsewhere in this issue. The Swiss finished second, 34 points behind our team.

In the absence of a detailed report from team officials, it is interesting to speculate as to what principal factors brought about this American victory. That the splendid morale of the team was a contributing factor is a foregone conclusion. Always a firm believer in the value of teamwork, Major Boles' motto may appropriately have been "All for one and one for all." Long before the team sailed, he spared no effort to drive this point home to every man. Perhaps that is one reason why the American shooters annexed no individual records. Our team went over to win the big match—to bring back the Argentine Cup—not to stage a battle royal among themselves and the other team members with a view to distinguishing themselves as individual champions.

The low-velocity ammunition which the Americans used this year may also have been partly responsible for the good results. Nearly five hundred foot-seconds slower than the standard 2,700, the 1930 match cartridge represented a radical departure from established loads formerly used in the International Matches. Notwithstanding this, Team Captain Boles chose ammunition which would be kind to his shooters. While the slower bullet obviously would not buck the wind quite as well, Boles was convinced that the ease with which it could be shot would more than compensate for the few points which might be lost due to wind. The victory at Antwerp proved conclusively that he was right.

Last but by no means least important of the speculative contributing elements incident to our team's success, is the effort and enthusiasm that was put forth by every member of the American squad. Ours was a five-seventh Civilian Team, largely composed of men just out of college and in the prime of youth. They went into the match over enthusiastic but not over confident. The United States outfit was armed with plenty of punch, plus pep, and proved itself an unbeatable combination. We welcome the return of our World Champions, and join with our friends the Swedes in extending to the team "congratulations on the splendid victory we always knew was coming."

The End—Or The Beginning?

AS THIS issue of THE AMERICAN RIFLEMAN comes to the hands of its readers, activities at Camp Perry will be well under way. The great shooting event of the year, looked forward to, planned for, has become a reality. It is true that comparatively few of our readers are able to go to Perry each year; less than 10 per cent as a rule; but the others are there in spirit, and it is not the same 10 per cent that goes each time. Whether or not one hopes to be at the matches in the fall, the vision of this great shooting event to some extent colors the background of his shooting activities for the entire year.

But in two short weeks the 1930 National Matches will have passed into history. What are we going to do then? Shall we grease the rifles and set them aside until spring? A few may do this, but not many. The indoor gallery season is at hand, offering as keen competition and lively interest as any may desire. The small bore may take the place of the .30-caliber, but still the shooting will go on.

Then, in many regions where the climate is favorable, the outdoor range is never shut down, and the bark of the Springfield may be heard on any day of the year. The big-game season in the North opens about the time the early snows arrive. The deer and bear season in Pennsylvania and other sections of the country is at hand. In certain localities varmints need killing all the year round. And the true outdoor type of gun crank is never stopped by weather conditions, anyway. He can always find some sheltered spot from which to fire a few shots at paper now and then.

And winter is the hand-loader's own season. Messing with melted lead in attic, cellar, or woodshed is not such a distasteful pastime on chilly evenings and Sundays; and whenever time hangs heavy on one's hands he can, with profit, attend to the matter of providing the year's ammunition supply. The reloader usually has some new combination to try out, but it's hard to find the time for such things during warm weather, when so much is doing. Cold weather offers a fine opportunity for such experiments.

The point is, that if a man has shooting blood in his veins, he is going to shoot. Some prefer one kind of shooting, and some another; but to all, the smell of powder smoke is as a sweet perfume—something never forgotten, and sorely missed when denied. Such a one must be in dire straits indeed if he sets his rifles aside for very long. Certainly the changing seasons alone can never bring this about.

And so, while the National Matches mark the culmination of all shooting activities for the previous twelve months, they at the same time represent the starting point—the beginning—of another twelve-month period, better even than the last.

The AMERICAN RIFLEMAN

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SEPTEMBER, 1930

No. 9

Increased Bullet Speeds*

Effects and Possibilities of a German Rifle and Its Ammunition

By H. GERLICH**

IN ACCEPTING the invitation received from the Editor of *Army Ordnance* to contribute an article from my own pen with reference to certain results obtained in my research work, it is my first duty to express my sincere gratitude for this foreign appreciation of the scientific and practical work I have been able to perform in the way of improving the ballistics and the efficiency of the modern rifle cartridge and the rifle adapted to it. The actual success consists in the practical realization of a somewhat decisive increase of the radius of effective action of the cartridge and the rifle it is fired from and also in a telling increase of its effects.

In making my technical statements I am doing so as a rifleman and hunter as well as an engineer. Having been born in St. Louis, Mo., I am not altogether a complete stranger to the United States and American sportsmen and engineers. In receiving the hospitality of the pages of *Army Ordnance*, I am availing myself of this opportunity as a man and rifleman, who is doing his work for the value of the thing itself, because he is driven to it by his innate love for the grooved tube, which a gracious Providence has been putting into the hands of men. I do so for the sake of scientific and practical research and progress and with the declared intention of improving the ballistics and efficiency of military firearms.

Rifleman all know the slogan: Once a cartridge-maker always—a liar. However, even gun and cartridge history has a moral, for the state of perfection of arms is more than a fair index of the degree of general technical development reached. Indeed, it is so for so-called human civilization, if not culture. And history is frequently not only stranger than fiction, but is certainly more interesting.

Being well aware that traditions are hard to break and that prejudices of old-established custom die hard, the author will make no claims whatever in the following remarks, but will limit himself, as

far as possible, to stating mere facts and the results of actual, practical tests carried out minutely and with the aid of modern instruments of precision under the control of independent experts or the observations made in the field by practical game-hunters. Readers should not expect any wisdom here unless supplied by their own conclusions.

A practical game and target shot since his earliest boyhood, the son of a man who shot wapiti in Wyoming and bison in the Western prairie lands more than 60 years ago, who hunted near the sources of the Nile before the Mahdi shut off these regions from the so-called civilized world, and who shot tigers and big game in India later on while holding a high official position in Calcutta, the writer has inherited to the full that love for the hunt and the hunter's noblest arm, the rifle. Being an engineer and a specialist in thermodynamics he has during several decades devoted at least part of his time and professional work to the improvement and development of the rifle and its cartridge.

He was utterly convinced all the while, that as a real tool of precision, and with regard to really far-reaching effects, even the most efficient of our modern Nitro-express rifles were still in their infancy and a long way from fulfilling even moderate aspirations. Indeed, it is the writer's firm belief that only very few people have but even a vague imagination as to how far our high-velocity, flat-trajectory rifle and its cartridge may be developed as a tool of precision and as a conveniently handled arm of range, power, and efficiency. His own aims went for this goal, and he has the satisfaction that he has been able to realize so far at least a certain preliminary practical step in this direction in spite of his very limited private means and time and that for once—in using the words of Major Pollard, London—private sporting design has taken in various respects the lead and precedence over military design.

The so-called Halger .280 H. V. Magnum cartridge and its bullets, designed and developed by the writer, are but a preliminary step



Fig. 2.—Full-size reproduction of 5-shot group with Halger .280 H. V. Magnum magazine rifle. Made at 100 meters (109.4 yards) using 100-grain bullet, initial velocity 3,815 foot-seconds; mean velocity, over 109.4 yards, approximately 3,600 foot-seconds

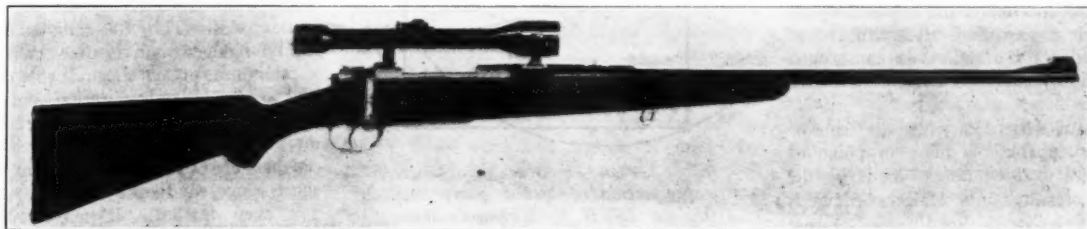


Fig. 1.—Halger .280 high-velocity Magnum rifle with Zeiss-Zielsechs telescopic sight. The straight stock and somewhat lengthy pistol grip on this specimen are especially designed to the author's style of shooting

* Reprinted from *Army Ordnance*.

**Engineer, Kiel, Germany.

toward further and more important developments. In spite of this fact the extent of the sudden progress made ballistically with the present Halger cartridge is in actual practice in several respects very telling indeed and partly even highly decisive, quite apart from the numerical increase of the velocity and energy figures. The caliber of 7-mm. was chosen because of its specific ballistic qualities in a small arm and for other considerations as well. The writer is not at all surprised by certain anticipations with regard to definite drawbacks, which, in the light of present practice and experience, are seemingly inseparable from a cartridge and rifle of this type and power—i.e., in connection with bullet velocities of up to 4,000 foot-seconds. Many years of hard and extensive practice with cartridges of the same or similar types have proved these anticipations to be without foundation, for with the aid of corresponding devices, materials, and construction these drawbacks and difficulties may be eliminated and overcome successfully. The Halger-Magnum cartridge and rifle has been designed exclusively as a sporting rifle, although, naturally, conclusions may be drawn from it in other directions.

The writer, in the course of his experiments and during a period of many years, has fired personally some 25,000 or more rounds from rifles of this type on the testing stand, on the target range, and in the hunting fields. For the last two and a half years an appreciable number of Halger-Magnums have been used in the hunting fields of many countries by experienced hunters and experts of the most exacting type. The writer himself or his co-operators on the testing ranges, etc., never had even a single burst case, although in a few instances some season-cracking at the mouth of the cases has been observed.

The writer's own expectations have partly been appreciably surpassed with regard to efficiency on game of these cartridges, and so far not a single case has come to his knowledge that a piece of game hit at all has not come to bag. Hunters are stating that all game even not hit in a vital spot comes to bag quickly. The writer to a certain extent looks upon this fact as being another proof of the correctness of the fundamental ballistic principle that not only trajectory and accuracy are inseparably joined but that also trajectory and effect stand in closest relation to each other. The cartridge, which represents the acme ballistically, at all events offers the opportunity to obtain from it a maximum also with regard to average reliability of effect on game even within enormously extended limits of effective ranges.

As samples of what a cartridge and rifle of this type are capable of doing in point of absolute accuracy, three targets made by the writer when testing new Halgers previous to delivery at the Berlin Small Arms Testing Station and under the control of the station officials are reproduced (Figs. 2, 3, and 4) in actual size. It may be stated that, as per

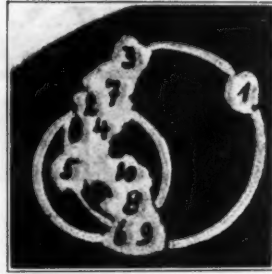


Fig. 3.—Full-size reproduction of 10-shot group with Halger .280 H. V. Magnum double rifle. Made at 80 meters (88 yards) using 180-grain gilding-metal-jacketed bullet, initial velocity 3,043 foot-seconds

publication of the testing station itself, the Halger rifles officially tested at the station when brand new and fitted with all sorts of stocks, sights, trigger-pulls, etc., and testing them under all sorts of weather conditions, averaged in the accuracy test a 5-shot group at 100 meters (110 yards) a diameter of circle including centers of all 5 shots of but just about 1 inch.

The ballistics, as confirmed by repeated tests, as well as the observations made in the hunting fields, actually prove that the effective and reliable killing range—i.e., the range at which the striking velocity of the bullet warrants in practice the required higher degree of shock intensity and explosive hydrodynamic effect upon animal tissue (approximately 2,500 foot-seconds or at least 2,400 foot-seconds)—has been fully doubled by the Halger, without counting the increased intensity of effect over the shorter ranges. At the same time, and apart from the accuracy, this new cartridge guarantees a minimum of deviation from the line of aim (trajectory almost coincident with line of aim even over extreme hunting ranges) and

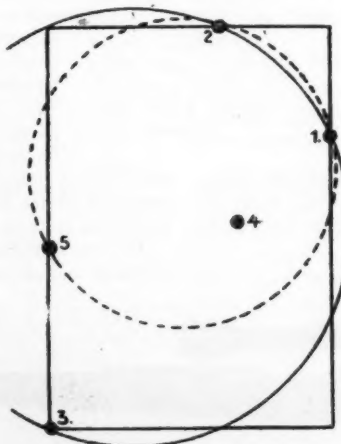


Fig. 4.—One-quarter actual size reproduction of 5-shot group with Halger .280 H. V. Magnum. Made at 1,000 meters (1,094 yards) using 180-grain iron-jacketed and nickel-plated bullet; initial velocity 3,043 foot-seconds

the shortest time of flight so far realized with a small arm. Therefore, it establishes a most decisive increase of practical accuracy in the hunting fields and even at the target, which is entirely due to the increased initial velocity of the bullet combined with its markedly increased ranging characteristics. The practical accuracy, however, is what counts decisively in hunting practice and also in warfare.

Halger bullets fired at Halger speeds are influenced by atmospheric conditions, wind, etc., relatively much less than any other small-arm missiles. They keep their mean points of impact, which in Halger-Magnum magazine rifles are regulated in such a way that up to 300-350 yards the impacts of the three bullets practically coincide with the same sight-setting and same point of aim, and not only show an extreme absolute degree of stability in flight, but also become highly stabilized with increased quickness and within a much shortened distance from the muzzle of the rifle. Hence the marked relative increase of the value of their ballistic coefficient, which reaches in the 180-grain Halger bullet a maximum thus far obtained from any small-bore bullet (at least up to a range of about 2,200 yards).

The ballistics of the three Halger bullets up to 300 meters (328 yards), as determined by special tests carried out by the German Testing Station for Small-Arms of Berlin-Halensee and obtained with Halger .280 H. V. Magnum cartridges of present commercial loading from a Halger-Magnum rifle fitted with a 28 $\frac{3}{8}$ -inch barrel, are shown in Table I.

	At muzzle	At 100 meters (109.33 yds.)	At 200 meters (218.66 yds.)	At 300 meters (328 yds.)
Velocities in foot-seconds				
100-grain bullet (Sectional density = 16.5 grams, cm ²)	3,900	3,360	2,930	2,510
145-grain bullet (Sectional density = 34.9 grams, cm ²)	3,500	3,260	3,070	2,900
180-grain bullet (Sectional density = 30.5 grams, cm ²)	3,043	2,903	2,800	2,700
Energies in foot-pounds				
100-grain bullet =	3,320	2,480	1,875	1,374
145-grain bullet =	3,880	3,380	3,000	2,655
180-grain bullet =	3,690	3,355	3,125	2,910

It is well to compare not only the striking energies of these bullets at the various ranges with others of various calibers, but especially the striking velocities. It may also be noted that the time of flight, for instance, of the 100-grain Halger bullet over the first 200 meters (218.66 yards), amounts to less than .2 second, which means an average mean velocity of this bullet over approximately the first 220 yards of over 3,300 foot-seconds. This 100-grain bullet giving a highly reduced barrel time combined with a minimum of barrel and rifle reaction in the way of barrel vibration and recoil and becoming quickly stabilized after leaving the muzzle is partly due to these causes. It is capable of extreme accuracy at even very short ranges and up to about 350-400 yards and even farther. It may sound strange to some fellow riflemen, but it is a fact, nevertheless, that this bullet is a dependable performer even at 328 yards—i.e., the international free-rifle distance.

With regard to erosion in a rifle firing a cartridge of this type, as well as with regard to metal-fouling in connection with velocities of up to 4,000 foot-seconds, a practical rifleman would have at least certain misgivings at the start. So had the writer. To state the facts bluntly: undue erosion has been avoided in this rifle and with this cartridge by the use of a stable and relatively very cool burning, pure nitrocellulose propellant of a high specific density and a highly progressive character.

The residues of these pure nitrocellulose propellants are slight and are, as proved by chemical analysis, nothing but harmless ash entirely indifferent to steel; besides, the patented method of regulating the cartridge with its three different bullets in connection with the chambering and boring of the barrel prevents all gas leakage past the bullet from its start from its seating in the cartridge neck and seals the bore reliably during the whole passage of the bullet. At the same time Austrian and German steel chemists have not been idle and have put at our disposal improved compound steels for rifle barrels, which not only combine a high degree of elasticity and hardness, but which also excel by their special properties of resistance to corrosion and heat. No doubt the exact machining of these special compound steels is harder and more expensive, as is the cost of these materials themselves over that of most present standard barrel steels, still the difference in price is certainly not so high as to prevent them being used for the purpose.

The writer has in his own possession Halger-Magnum rifles, from which more than 2,500 rounds have been fired—and partly experimental loads giving increased pressures and velocities—the special steel barrels of which have not altered anywhere in their bores and especially not at their leads more than .005-.01-mm. (.0002-.0004-inch) from their condition when new. These barrels will not be shot out, but—if spoiled—are, as with most other barrels, as a rule cleaned by improper cleaning methods and unsuitable cleaning tools.

Metal-fouling in a rifle firing jacketed bullets is more or less always present and indeed even at low velocities. Iron-jacketed bullets correctly nickel-plated (with a slight percentage of copper, as, for instance, that has been used for decades in the German military 154-grain Spitzer bullet, which is fired with a velocity of almost 2,900 foot-seconds), do not have in themselves the same tendency to foul the barrels as is the case with most cupro-nickel-jacketed or similarly jacketed bullets of American or English manufacture, nor do they build up metal-fouling to a higher degree. This is a proved fact. It may also be mentioned that the so-called gilding-metal jackets as used, for instance, in the new American service and sporting bullets, behave satisfactorily in carefully bored rifle barrels at velocities up to about 3,000 foot-seconds; but so far as practical experience seems to show, velocities exceeding these speed limits to a greater extent the

U. S. gilding-metal alloy, for instance, becomes less satisfactory or even unsatisfactory in its behavior.

This, however, is not the case with an iron-jacketed and correctly nickel-plated bullet fired with a relatively cool-burning propellant and from a carefully constructed and properly polished barrel, which in its construction and finish warrants a minimum of bullet deformation and friction. We have certainly not yet reached the millenium in this respect, but it is a proved fact that today bullets may be fired with 4,000 foot-seconds and more with actually much less metal-fouling of the bore than has been possible heretofore at velocities in the neighborhood of but 2,500 foot-seconds or even appreciably less. It should also be pointed out that bullet friction and metal-fouling of barrels does not increase in direct proportion with the speed of the bullets and that in fact when certain speed limits are reached both absolute friction and metal-fouling—in analogy with similar physical phenomena—are appreciably decreasing; besides, there have been developed oxidizing ammonia swabbing solutions which are harmless to the bore and efficiently remove nickel and copper-fouling as well as all primer salts.

Questions with regard to muzzle blast, noise, and recoil of the Halger-Magnum could better be answered by an unbiased user who has had an opportunity to shoot the rifle and watch its behavior in these respects. Indeed, the report of the King's Prize Winner at Bisley, 1928, Mr. Arthur C. Hall, with regard to recoil, muzzle-blast, and noise of the Halger .280 has been published in *Country Life*, London (March 16, 1929). The slight recoil of the Halger, especially in relation to its high muzzle energy, as felt by the marksman is a special feature of this rifle and cartridge, and it is because of this that full advantage of the extreme accuracy of this rifle and cartridge is rendered possible. The shot that counts is only the shot that hits.

The anticipation that probably there is a snag somewhere, and that the advantages of such a cartridge and rifle can not probably be reaped without a certain compensating disadvantage, is perhaps partly correct. This disadvantage, however, is not a technical one, but one of expense and the necessity of highly skilled and accurate manufacture.

No doubt bullets of this type and caliber may be modified into armor-piercing bullets in following the usual construction of such bullets. However, quite apart from possible developments and modifications along these lines, from which certainly in connection with Halger bullet-speeds a very telling and appreciable increase of penetration may be obtained, the writer may be allowed to touch upon certain observations made by himself and his assistants when developing certain cartridges and bullets possessing highly increased speeds. The observations made with regard to certain bullet effects upon hard objects capable of giving a maximum of resistance against bullet penetration

are highly characteristic and invite conclusions which no doubt will greatly interest all readers of *Army Ordnance*.

When running the tuning-up trials for the fixing of the commercial loads of the Halger-Magnum cartridge in connection with the 100-grain bullet a load was tried which imparted a velocity of some 1,250 meter-seconds (some 4,100 foot-seconds) to this bullet of very light absolute weight and possessing a sectional density of but 16.5 grams, cm². With the first bullet fired against the contact plate at a distance of 50 meters (55 yards), the current of the Le-Boulange was interrupted, and it was found that one of the $\frac{5}{8}$ -inch bolts fixing the contact plate had snapped off clean without showing the least trace of any anterior flaw, but being perhaps a trifle short in grain.

Besides, it was found, to the astonishment of the writer's assistants, that the sharp, hollow copper point of the bullet, which was as thin and even thinner than the paper upon which *Army Ordnance* is printed, and which covered the expansion hole at the point of this mushrooming sporting bullet, had penetrated from $\frac{1}{4}$ to $\frac{5}{16}$ inch into the contact plate, which was new and made of the hardest Krupp armor plate. This plate being $1\frac{1}{4}$ inches thick and about 2 x 2 feet was a heavy one, and its surface was glass-hard. In spite of this fact the fragile, hollow Spitzer copper point of this bullet, which may be deformed with a finger nail, had made an indentation about $\frac{1}{4}$ to $\frac{5}{16}$ inch deep into the armor plate of practically the very same shape as the bullet's point. Indeed, the form of this entrance of the bullet point into the plate looked like a casting-form or an actual negative of the bullet's point. At the same time the surface material of the plate was pounded away around this point of impact in a rather circular area of about 1-inch diameter and to a depth of about $\frac{1}{16}$ inch and deeper.

No similar bullet effect upon such a plate had ever been observed previously, although many bullets with appreciably higher striking energy had been fired against such a plate. Nor were such effects observed with the 145-grain and 180-grain Halger bullets, which had just previously been fired against the same plate and the energy of which appreciably exceeded the striking energy of the speedier 100-grain bullet. Some five or six more 100-grain bullets were fired against the plate after this and then the plate controlled once more with the same observation made as with the first shot. The heavier bullets hitting the plate with a higher energy but at a lower speed had disintegrated upon the surface of the plate without entering into it at all and leaving but the usual whitish splash mark, while the speedier lighter bullets always penetrated into the glass-hard armor plate in the manner described. After a few more shots thrown upon the plate irregular pieces of walnut size began to drop out of the surface of the plate around the spots where Halger bullets had struck it, and with about a dozen such Halger shots the whole plate had been fairly wrecked! The writer's

assistants, looking askance at this phenomenon, were at a loss to understand how such a fragile bullet could possibly show such disastrous effects upon a dead-hard armor plate.

The explanation, however, seemed to the writer easy and plausible enough. Undoubtedly a critical striking velocity had been reached with the little bullet, and owing to the very high velocity with which the bullet struck the surface of the plate, the dynamic process was so sudden and intense, and so-to-say "timeless," that there was no time left for the physical properties of the two bodies—i.e., the fragile bullet point and the glass-hard steel plate—to show up in the usual way. The effects of physical elasticity of the two bodies could not materially show up under these circumstances, and there was no time left for the elasticity and plasticity of the materials to assert themselves. Even a very soft and plastic body becomes relatively unyielding, dead-hard, and actually unelastic when the dynamic process becomes accelerated to such a degree that the time is no longer available to render possible the effects of the physical elasticity and plasticity of materials. *Cum grano salis*: the Einstein theory of relativity in a mechanical-dynamical sense.

The writer may be allowed to call to the attention of the readers of *Army Ordnance* his statements and deductions made in connection with these observations in his article entitled, "*Leistungssteigerung der Infanteriewaffen, Geschossgeschwindigkeit und Taktik*," published by Generalleutnant M. Schwarte (editor) in the German military-technical paper *Heerestechnik* (No. 9, September, 1929). He considers it also his duty to recall certain investigations and statements of Captain Tressidder made more than 30 years ago with reference to the specific performance of projectiles striking at different velocities and his specific distinctions in connection with so-called "critical" striking velocities. Although Captain Tressidder's valuable investigations referred almost exclusively to large-bore, capped projectiles of naval guns, and, moreover, practically only to the specific behavior and effects of such bullets striking armor plate about normally at right angles, they are nevertheless even now quite actual and of special interest to riflemen and students of infantry arms.



Fig. 5.—The Halger .335 H. V. Super Magnum cartridge (actual size)

This in spite of the fact that Captain Tressidder's tests and observations were naturally limited to lower speed limits—as bullet velocities of more than about 2,800 foot-seconds or so were, according to the writer's knowledge, not available to him.

A point worthy of special attention is the observation made in the course of the writer's trials with highly increased bullet speeds that, apart from their marked insensibility against being diverted from their line of flight by obstacles, they would "bite" and penetrate into very hard materials, such as granite blocks, even when striking their surface oblique and at very small angles. They did not ricochet and were not diverted without performing noticeable work of destruction on such hard and resisting objects, as would have been the case at lower striking velocities. They "blasted" these rocks, or at least partly smashed them, even under such severe conditions. Since soft-cored, hollow-point sporting bullets were used under these circumstances the bullets disintegrated entirely and were practically pulverized when striking at small angles—not, however, without performing destructive work of the nature described. This was, for instance, the case with a 100-grain bullet driven at 4,100 foot-seconds in connection with an experimental Halger .280 load, which proved to be highly accurate at the same time.

Similar effects have been observed regularly with these bullets fired even from standard commercial Halger cartridges against granite stones at ranges from about 60 to 100 yards, when such freely deposited stones will actually be blasted or detonated by a single such bullet and indeed with the noise of a blast shot. Bullets striking with lower velocities—even being appreciably heavier and carrying much more striking energy—will not be able to render effects of such character and intensity.

It is not a matter of caliber and bullet energy or bullet weight and mass, but in the very first instance a question of bullet velocity. The correctness of this assertion—in a physical sense—has only quite recently

been proved again ballistically by another sporting—i.e., big-game—cartridge and rifle developed by the writer. This is his new Halger .335 H. V. Super-Magnum cartridge, which is fired from a rifle weighing, even with

a long barrel, $9\frac{1}{4}$ to $9\frac{1}{2}$ pounds and possessing a perceptible recoil not heavier than that of a standard 8- or 9-mm. rifle firing bullets of some 220 grains' weight at an initial velocity of about 2,000 to 2,100 foot-seconds. This rifle has been designed and developed in order to substitute efficiently the ancient large-bore and overheavy cordite big-game rifles with relatively low bullet speeds and moderate accuracy even at short ranges. Notwithstanding a muzzle velocity of 3,125 foot-seconds and an energy of 5,220 foot-pounds, this 240-grain (sectional density = 27.5 grams, cm.²) boat-tail, copper-pointed or full-metal-jacketed bullet is quite incapable of competing with, for instance, the little 100-grain Halger .280 H. V. Magnum bullet (commercial cartridge) possessing an initial energy of but 3,320 foot-pounds, at however, 3,900 foot-seconds, with regard to its specific destructive effects upon armor plate.

Probably the new Halger .244 cartridge and extra-light-weight rifle, which is now being developed, firing a very light bullet at much higher speeds will be far more interesting in this direction. The 300-meter trajectory of the 240-grain boat-tail .335 Halger bullet over line of sight when using a telescopic sight is but exactly 5 inches, and the ballistic performance of this powerful new cartridge may be judged by the results and figures obtained during the official tests. These were published by the German Testing Station for Small Arms at Berlin-Wannsee in its technical paper "*Kugel und Schrot*" (No. 24, December 15, 1929). Apart from the splendid showing made in point of accuracy up to 328 yards the results were as follows:

	100	200	300
Distance	Meters	Meters	Meters
Velocity in foot-seconds	3,125	2,888	2,678
Velocity in foot-pounds	5,220	4,455	3,833

It is the writer's firm belief, based upon theoretical and mathematical considerations as well as upon actual observations with still higher bullet speeds, that in future even riflemen will use but one standard and sim-



Fig. 6.—Halger .280 bullets in flight. Left: 110-grain flat-base bullet, 3,815 foot-seconds initial velocity. Center: 143.5-grain stream-line bullet, 3,500 foot-seconds initial velocity. Right: 180-grain stream-line bullet, initial velocity 3,043 foot-seconds

ple form and construction of bullet for shooting all sorts of game and that they will do so with far more reliable effects and even at much longer ranges than is today possible even with the most suitably adapted sporting bullets of the mushrooming and expanding, etc., types. These standard sporting bullets of the future will be fully metal-patched or solid bullets, fired with initial and striking velocities much in excess of what so far has actually been realized in the way of bullet speeds. Under such conditions the question of caliber and the disadvantages of the present fully-jacketed military small-bore bullets, which in connection with the heretofore usual striking velocities are piercing but not smashing, shocking and stopping bullets will be eliminated.

The question put to the writer, whether an approximate 4,000 foot-second initial bullet speed is the limit or whether some further improvement in propellants and bullet design will transcend this figure, may be answered without fear of committing one's self to an erroneous prophecy. This limit will most surely be exceeded, and indeed the writer himself is in a position to admit that he is exceeding the 5,500 foot-second limit and is drawing near a still higher speed stage with bullets and cartridges with practically standard sectional bullet densities! Even if sportsmen will not require such ultrahigh velocities, the military are bound to do so in time and especially in connection with machine guns mounted on aircraft and also for larger guns and antiaircraft guns to be used from the ground. To the writer it is astonishing that, even now, no higher bullet velocities have been realized in connection with such guns and even with large naval guns.

It is scarcely doubtful any longer, even to the uninitiated, that in future military services will be compelled to adopt a somewhat smaller caliber for their infantry rifles, which so far still adhere to a bore in the neighborhood of .30 or about 8-mm. A caliber from about .250-.280—i.e., about 7-mm. or even somewhat less—and bullets of absolute light weight will, for many obvious reasons, surely be chosen in connection with the self-loading military rifle, which in time is bound to be generally adopted by the military powers. Several arms of this type and bore, firing bullets of appreciably less absolute weight and even less sectional density than used heretofore, have been developed by some of the world's leading armor firms and have been tested quite successfully. They are, ballistically, about on even terms with the majority of present military cartridges and bullets.

However, the writer's view is, that all these rifles and at least cartridges, whatever their present specific advantages, if adopted in the near future, stand a wonderfully fine chance of becoming obsolete and superseded before even the respective governments will have been able to arm part of their troops with them. These present arms are insufficient ballistically, in the light of research and development, and with regard to their

specific destructive powers against armor plate, tanks, and other modern machines of war. They do not enable the infantryman efficiently to fight against such modern machinery, even at short ranges, with his capital arms, his rifle, and his machine gun. This advantage, however, should be given him and should be considered a necessity under the conditions of modern warfare. The successful realization of this is, judging by the writer's latest ballistic attainments, quite within the grasp of modern technique and, indeed, in connection with arms certainly not more cumbersome, bulky or more weighty than our present rifles and guns.

For technical and ballistic reasons various scientific tests have been carried out with the Halger .280 H. V. Magnum wherein angles of elevation—i.e., trajectories—were controlled on the range up to and including the distance of 2,000 meters (practically 2,200 yards).

The accompanying pictures (Fig. 6) show the three Halger bullets in full flight. These three bullets differ greatly from each other in weight, form, and initial velocity, but may be fired from the same rifle with practically the same mean point of impact up to longest hunting ranges with the same sight setting and without changing the point of aim. Besides the relative tuning-up of the three loads it is, of course, the high bullet stability and the absolute degree of flatness of the trajectories, so far never obtained with small-arm bullets, which render such a result possible.

The ballistics of the 100-grain Halger bullet have in the meantime been further improved somewhat with a new load of a somewhat differently tuned-up propellant, so that it now starts with an initial velocity of 3,900 foot-seconds when fired from the commercial Halger cartridge and from a 28 $\frac{3}{8}$ -inch Halger barrel.

The recent tests up to a distance of 2,000 meters were started at a range of 400 meters, and the distance was then gradually increased by 200 meters up to 1,200 meters. At each distance 8 shots were fired. Thereafter the distance was successively increased to 1,500 meters, 1,800 meters, and finally to 2,000 meters, or just about 2,200 yards. Twelve shots were fired on each of these three longest ranges. There was no intermediate cleaning of barrel during the test. The Halger-Magnum rifle used in this test was fitted with a 28 $\frac{3}{8}$ -inch nonrusting Böhler Antinit N. G. steel barrel and, owing to the mountings for a telescopic sight—which, however, was not used in this test—the Model 98 German military curve-sight (German service sight) had to be placed rather forward on the barrel, thus reducing the sight radius appreciably and increasing errors of aim correspondingly.

The aiming was done with this service, iron back-sight and standard military fore-sight. In spite of the shortened sight radius and using the rough, service iron sights the maximum spread of the Halger 180-grain bullet, at the maximum 2,200 yards, with

(Continued on page 28)

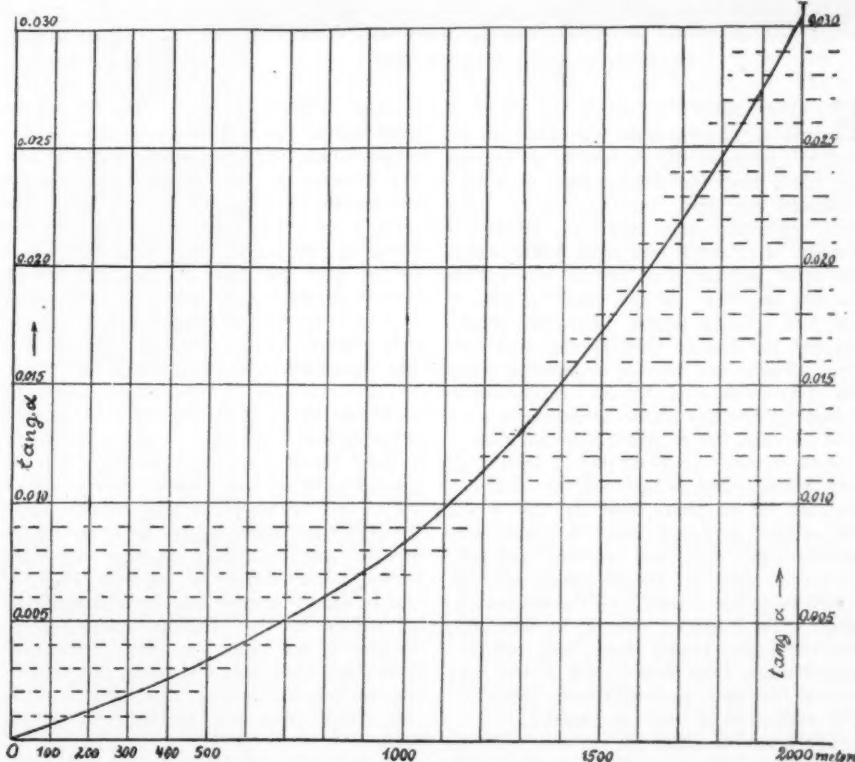


Fig. 7.—Curve of values of tangents (tg. α) of elevation up to 2,000 meters (approximately 2,200 yards). For the 180-grain Halger .280 H. V. Magnum sporting stream-line Spitzer bullet fired from 28 $\frac{3}{8}$ -inch barrel, initial velocity 3,043 foot-seconds



Buddy, and two that bit the dust

ENVIRONMENT evidently exerts a greater influence upon our lives than we realize; and especially is this so as regards the effect that the surroundings of earlier childhood has upon our later lives. My early childhood was spent in Mississippi County, Mo.; and if ever there was a veritable game paradise, that section was one in the 80's and 90's. At that time the country was but sparsely settled. Immense forests covered the greater part of the land, and great sloughs and bayous of running water cut them into a regular checkerboard. I doubt if ever any section abounded in more wild life than this section did at that time.

From earliest childhood days I learned to love a gun. My father took me with him regularly on his hunts from the time I was old enough to follow him. I could carry squirrels, and turn them for him, and keep an eye on them in case he missed, while he rammed another charge down the old muzzle-loader. So I learned the art of woodcraft and the ways of wild things long before I gained much from books; and it was only natural that such an environment should instill within me a love for firearms.

The desire to shoot got possession of me before I was able to handle properly the old, long-barrel muzzle-loaders of my father's time; and it was hard to resist the tempta-

tion. With me, as years advanced and the daily toil at the mill began to come in for consideration, things also changed. I left, and went to the city, where I took up the watchmaker's trade, which I followed for some years. The open game season which comes in the fall of the year always found us too busy preparing for the holidays to permit of much time with dogs and guns; and as a result, for some years I did not own a firearm of any type. But the old love and desire within never perished.

Ten years ago I moved my home to Staunton, Va., and settled down to become a full-fledged Virginian. I had traveled for a good many years, and had covered the greater part of the United States; and I found this to be one of, if not the most desirable, spots in the land, so far as climate and natural advantages are concerned. Our climate is as near ideal as can be found; and we have an abundance of attractions in the mountains and forests. Virginia is not without a goodly amount of game; and right here within the Old Dominion one can get his bear, deer, turkey, squirrels, birds, pheasants, rabbits, and ground hogs.

Back in Missouri I had made the acquaintance of all of these, save the ground hog. To me such an animal was only a myth; and

Virginia Sport De Luxe

By WALKER GREER

I, like many others, often doubted if it really did exist. But on coming here I soon made the acquaintance of His Majesty; and that acquaintance has steadily ripened. I have shot and eaten about every type and kind of game that may reasonably be found; but to me the sport de luxe is hunting the ground hog. He makes his appearance in this section of the country the latter part of March, and remains with us until the latter part of October. He comes at a time when the closed season on game permits of no shooting; at a time when we of the business world have our most leisure; and, best of all, at the most delightful season of the year, when all nature is at her best:

"And what so rare as a day in June!
Then, if ever, come perfect days."

At this time his hogship rules supreme in the meadows and the hillsides; and to the lover of the chase and the outdoors, no finer sport can be found than hunting him. He is cunning; his eyesight is as good as yours, or better; his hearing is keen, and his sense of smell is equally as good. He is just about as hard to stalk as anything you can think of. His vitality is the greatest of any living animal, except, perhaps, the wolverine. Nothing requires more killing than a ground hog. I have disemboweled them, shot off legs, and generally torn them to pieces; but yet they got into their holes, and away from me. I even brained one, and he got into his hole. I happen to have witness of this fact in one of my running mates, a minister; so I can prove it.



Even the smallest member of the family takes part in the hunt

Experience soon taught me that to be successful in hunting ground hogs a good gun was essential. Having drifted away from guns, I was brought back to the love of, and desire for, them as soon as I became interested in the ground hogs. Perceiving that it really requires a gun with considerable energy, a flat trajectory, and good accuracy to hunt ground hogs successfully, I first decided to try out a Model 14, .25-caliber Remington. I had Mr. Fecker build me a 6X scope, which Remington mounted on this gun, using Winchester mounts. At that time we had nothing in the bolt actions to speak of, and this outfit appeared to be about the best bet. With this gun I killed some few hogs, but that type of rifle I soon found to be unsuited for such work, and I gave it up. The Great War placed the bolt action on the map, and I caught the fever like many others. My next venture was a remodeled Krag, and I found this to be a much better proposition. With it I killed a lot of hogs. But I wanted a still better gun; and as the rage for remodeled Springfields had just gotten well started, I made the acquaintance of Mr. A. O. Niedner, of the Niedner Rifle Corporation, and put up to him my problems.

At that moment I had a very beautiful 7-mm. Mannlicher type Mauser, and it was brother Niedner's suggestion that I permit him to rebarrel this gun with one of his handmade barrels chambered for the .30-06

case necked down to .25 caliber. As I have always been partial to the .25-caliber, this sounded good to me, and Mr. Niedner was promptly commissioned to do the work.

In due time my rifle came back from Dowagiac, and I next tackled the scope problem. At that time little was available in either scopes or mountings, and I soon saw I was up against a real problem. I do not care for the small-barreled American scopes; they are all right for target work, but to me they are worthless for game purposes. So I went to Mr. Jas. V. Howe for assistance, and he advised a Hensoldt scope with a Noske mount. That was some few years back, before either Niedner or Griffin & Howe had made a mount. So I accepted Mr. Howe's judgment, and had him mount the scope as he advised. The gun duly arrived from Cleveland, and after hogs I went. The scope proved to be a wonder; but soon I found that the stock as originally made was not adapted to the scope. The comb was too



Some of my artillery

low; and further, I did not like the shape of it. So I again appealed to the Niedner Rifle Corporation, and their Mr. Shellhamer and I worked out a stock to fit me. The final result is shown in the picture—a gun of my dreams, if such can be. I have now used this rifle for some five years, and I am more than pleased with it. Since my rifle was made, several others also have had similar rifles made up; and the .25 Special has come to be quite generally known; and numerous articles have been written about the rifle and the cartridge. As

for this particular cartridge, I think it the most versatile of any cartridge within the whole American category. There are so many bullets in .25 caliber, from the cheap lead bullets up to the jacketed, of all types and varieties, and so many good, suitable powders, that to me it is the most desirable cartridge to be had. Few of us will ever bag a moose, grizzly, or elk; and for everything less on the Western Hemisphere, this cartridge is amply powerful. With the 117-grain bullet it is all the killer one can desire for sheep, deer, or small bear. With the 60-, 87-, and 100-grain bullet you can handle everything from squirrel to deer.

When making my barrel, brother Niedner cut a straight-line loading tool at the same time and with the same chambering reamer; and with the addition of an Ideal re- and de-capper, I have a whole loading factory. I use various types of bullets, but the 87-grain seems to be the best of all. The last few weeks I have been using the 100-grain U. S. improved bullet driven by 38 grains of 17½; but this bullet seems a little too tough, and does not mushroom so well. I have used also a number of the 60-grain hollow-point .25-20 bullets driven by 40 grains of 17½, and I like that load well. When hit with it a ground hog looks as if a stick of dynamite had been exploded within him; he is literally blown to pieces. I have used No. 80 in various reduced loads, and find the accuracy all that can be desired. One thing that I have noticed is the consistency of my groups with the various loads; I hardly see how there could be less variation. The rifle barrel is tightly chambered, the shell shows no expansion, and I am not required to do any resizing.

Guns are my hobby. I now own some twenty-five or more (I haven't counted them lately), but my choice of all is the .25 Niedner. I love and admire the old type single-shot, and now have seven of them—Winchesters, Stevens, and a fine de luxe grade of the old Schuetzen Ballard. I also have the gamut of shotguns, and use them. For a long time I dreamed of that proverbial "all-around gun," but I find that no such animal exists. A gun is a tool; and it is adapted to the purpose for which it was made and

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The whole family turns out for Mr. Ground Hog



A camp near the Zambezi River

Rifles for African Game

By W. ROBERTSON

THE question of rifles suitable for shooting African game is a very vexed one, some hunters preferring the small-bore, high-velocity rifle; others preferring weapons of a heavier bore, and greater knockdown force. While quite agreeing that the small-bore high-velocity rifle, with its very flat trajectory and great accuracy, may be a most deadly weapon in the hands of a really first-class shot, on the other hand I am, as a general rule, a great believer in relying more on weight of bullet than on velocity.

The whole tendency on the part of rifle-makers today is to produce, and push, the lighter type of rifle. Based upon the tests made, and figures procured at factory shooting ranges, rifles are sold which are guaranteed to have a minimum of recoil, great accuracy, and great penetration through baulks of wood and other like obstacles. With an experience of nearly twenty years of hunting African big game, from the largest to the smallest, behind me, I can confidently say that, within reason, of course, pro rata to the size of game hunted, the heavier bore wins every time. In my experience, the two great drawbacks to the small-bore are the following:

First. Though the rifle may be marvelously accurate, it is the man behind the gun that counts. Even in the case of a first-class shot, he may get his shot after a long stalk in the hot sun, or he may be panting from scrambling up a hillside when he gets his chance, and very accurate shooting may be extremely difficult, if not impossible. He may only get a quick snap-shot chance. The small-bore bullet simply wounds, and the wretched beast gets away, to die later in agony, or be pulled down by hyenas. To any decent person, to any real sportsman—using the word in its real sense, not in the sense to which it has been degraded—the wounding and losing of a beast is abhorrent. Had the animal been struck in the same place by a bullet of decent size, it would not have gone far. The blood spoor would be easy to follow, and the hunter would be soon able to come up with the beast, and, if he did not find it already dead, put it quickly out of its pain. Shooting is a cruel business, anyway, and it is up to every decent man to make it as humane as possible.

The second point is one that, I fancy, seldom occurs to the testers of small-bore rifles, and that is that the light bullet, however high the velocity, is easily deflected. A high-

velocity small-bore bullet may penetrate very deeply and accurately into solid baulks of timber, but let it be tried against, say, soft-wood timber intersected with iron bars. I have several times seen a small-bore bullet which had deflected on striking a rib or other bone, and glanced at as much as a right angle to the line of original flight. On the bullet striking the obstruction, the nose is struck over sidewise. This sidewise slew accentuates the deflection as the bullet proceeds, the missile finally finishing up at a surprisingly large angle from its original course. I am speaking at the moment of solid-nose bullets. The deflection is even more marked in the case of soft-nose. Where a heavy bullet would crash through, a light one glances. Even using a heavy bullet, I have seen some striking (the pun is not intended) examples of deflection. For instance, I remember once hitting a hippo bull square on the side of the head. The bullet must have caught an angle of bone; anyway, it tore its way upward, and away out at the top of the head, without penetrating the brain. I have seen the same sort of thing with elephant. A frontal shot at the forehead of an African elephant, unless fired very low—where it follows the

nostril channel—is practically sure to glance upward off the curving mass of frontal bone. And this with a heavy bullet. How much more with a light one, which has not the driving force of a large charge of cordite behind it?

In game which I have subsequently killed I have cut out deflected small-bore bullets struck by a bone into a curve, and with the consequent erratic course.

Lastly, velocity and penetration, though nonhunters may be surprised when I say so, count for very little compared with knock-down force. A bullet which crashes home, destroying a large area of tissues, and cutting a large number of veins and arteries, has much more killing effect than the slate-pencil type of bullet, which drills a small round hole, and expends its energy on the other side, knocking up a spurt of dust from the soil. To carry the analogy to the human element, any doctor who has had experience of war wounds can quote numberless instances of where a man may be shot right through the body—even through vital parts—with the small-bore military rifle, and be as sound as a bell after a few weeks in hospital, while another, hit in the same place by a larger-diametered, low-velocity shell splinter, will be dead in a few moments. The shell splinter may not have gone right through the man, but it killed him, which, after all, was the result hoped for by the firer.

One point claimed for the light rifle by its makers is its portability and absence of recoil. As to that, I can only say that a man fires but few shots at big game in a day—not like banging away all day at driven pheasants in England—and if his delicate white shoulder is liable to show nasty black bruises, or if he is not man enough to be able to carry a heavy-bore rifle and ammunition through a long day's march, he had better stop at home and drive a pen in a city office. To such, the foregoing remarks anent heavy bullets and humanity are meaningless. As a good horseman thinks first of his horse, so a good hunter should think first of clean killing.

To come down to more accurate figures anent bores of rifles, it is difficult, in any given group of similar sizes, to say which is the best bore for the game to be hunted, whether small, medium, or large. To start away with, I would rule out at once any bore smaller than .300 of an inch. Above this size there is a group of several bores very suitable for small antelope, and even for medium; such bores as .303, .311 (8-mm.), .315, and .318. Personally I have for many years used a sporting model magazine .303—the British military bore. The worst fault I have found with the .303 is that of its somewhat high trajectory, making shooting at short ranges of under a hundred yards a matter of judging how much below the intended striking point to aim. I have, however, in the course of years shot many hundreds of antelope, etc., with this rifle; and, once accustomed to the way the rifle shot, this fault was not a bad one. Ammunition was easy to procure, a big point in wander-

ing about a country where white men's settlements were few and far between, with stores carrying a very limited stock of ammunition sizes.

One of the finest rifles of this class of bore is the .318 magazine rifle, with the Mauser bolt action. It is very accurate, hard-hitting, and with a very flat trajectory. The .311 (8-mm.)—the German military bore—is a good rifle, too, but not, I consider, as good as the foregoing. The .315 I have never used, so can not speak from personal experience.

Of the medium bores—rifles which one might describe as general all-around rifles, excepting, of course, for heavy game, such as elephant and rhino, etc., bores such as .350, .365, .370, 9-mm., 9.5-mm., are all good, though personally I prefer to carry two rifles on a shooting trip—one light and one heavy; and then one is provided for all emergencies. In that case, I always carry the heavy bore myself when out hunting. It is an easy matter to exchange it for the light bore if one sees a small antelope that one wants to shoot. On the other hand, if when carrying the light bore one meets an elephant or lion in thick forest, one stretches one's hand back quickly for the heavy rifle, he will, more often than not, find that the native gun-bearer, with rifle attached, has shinned up the nearest tree.

The finest rifle I have ever used was a .450-400 bore double-barreled, ejector, express rifle by Jeffery of London. This rifle was absolutely accurate, flat in its trajectory, and possessed wonderful killing power. With this bore I have shot all sizes of African game, from elephant downward. It fires a 400-grain bullet driven by a charge of 55 to 60 grains of Cordite. The recoil is but small provided the rifle is held properly and the body allowed to swing to the shot. Of course, those who hold a rifle of this bore and charge loosely, or stand rigid to the recoil, must expect to be bumped by the recoil.

Of the heavy bores, .450 and, I believe, .470, are very good rifles, though I have never used the latter. The heaviest bores made firing Cordite—to wit, .577 and .600—I have never used. Except for stopping a charging elephant, I should fancy they were not as good weapons for shooting as those of the .450 type, as the excessive recoil and "up-chuck" would, I should think, make accurate shooting difficult. For stopping a charge at close quarters there is nothing to beat them, excepting, perhaps, the old-fashioned, spherical-bulleted 10- or 8-bore, firing a handful of black powder—a weapon now never seen.

The .500 bores, at least those I have seen, seem to be usually made to fire a lead bullet and black powder, two facts that put them out of court at once in the matter of modern game hunting. I once used a black-powder .500 bore; but the cloud of white smoke hanging in front of the muzzle was not conducive to using it again, lest perhaps the first thing seen, coming through the smoke, would be the wicked-looking charging head of *rhinoceros bicornis*, who, it was fondly hoped, had just met his quietus.

Of the smaller and medium-sized bores, the only type of rifle to use is the ordinary bolt-action magazine type, whether of the Lee-Enfield, Mauser, or Mannlicher patterns. Though I may offend the makers and enthusiasts of the type, never use the automatic pump-gun type of magazine rifle. They may work well under certain conditions, but in Africa they generally seem to jam at the slightest thing—dust, a butt of burnt grass stem, anything seems to upset their insides—with the result that, at the critical moment, the trusting buyer of the weapon is left defenceless. Personally I have never used one, and I know of none who have done so for more than a couple of shots, after which the rifle, held by the muzzle and describing a circle around the buyer's head, took wings, and finally came to earth in the nearest bush, the disgusted owner returning once more to the bolt-action weapon.

In the matter of heavy bores, I have always used and recommended the double-barreled weapon, owing to the action being a safe one in resisting the heavy strain and recoil of the driving charge. Nowadays, however, there are on the market several magazine weapons of such bores as .404 and .425, made by well-known makers, whose bolt action is, I believe, perfectly safe and reliable.

There is a certain type of bolt action, the name of which I may not mention (on the axiom of the greater the truth, the greater the libel) which I would warn any prospective buyer against. I may say that the method of closing the bolt is not the same as that of the ordinary Mauser and allied types. This mechanism may work well in theory, but in practice—a bit of dust in the end of the bolt slide, and the bolt jumps back on the shot, and goes through the shooter's forehead. After which he will "use no other," as Madame Patti put it, many years ago. I have heard of several cases of this happening with this bolt action. I have an idea that this action has now been scrapped by the makers.

The comments upon all the above-mentioned bores of rifle refer, of course, to weapons made by good makers. A rifle, whatever the bore, by an unreliable maker is asking for trouble. In hunting dangerous game, a cheap rifle may mean a free passage to call on St. Peter of the Keys. The same applies to ammunition.

With regard to ammunition, let us take the propellant first. Personally I have always pinned my faith to plain Cordite. It is the most reliable under tropical conditions, it does not deteriorate unduly, and is altogether reliable. There are several makes of patent Cordite on the market sold under different names, mostly ending with the letters "ite." Great things are claimed for these propellants by the makers, and no doubt they are true, *provided* they are used in rifles specially built and sighted for them. Cartridges loaded with ordinary Cordite can be got wherever ammunition is procurable, though, it must be remembered, to use plain Cordite in a rifle made for a patent Cordite produces nearly as erratic results as using

patent Cordite in a rifle built and sighted for the ordinary brand. Plain Cordite, in a rifle made and sighted for it, does all that any hunter can desire, and ammunition is easily procurable. Bullets for Cordite rifles fall into two classes: the solid-nosed, and the expanding—i.e., the soft-nosed, the split, and the dum dum or hollow-pointed. No hunter I have ever heard of ever uses the "explosive bullets" so beloved by novelists who have never seen big-game outside a zoo. To take them in order. The solid-nosed, nickel-coated lead bullet is the only projectile to use for heavy game, where penetration is needed—game such as elephant, rhino, and hippo. The soft-nosed and allied kinds are designed for use on soft-skinned animals. Expanding on impact, and continuing to mushroom as they pass through the animal's body, they produce a severe wound, and a quick death. Personally I use the soft-nose bullet from the heavy rifle for the larger antelope, and also for buffalo, but for the smaller antelope, using the light rifle, I prefer to take the ordinary solid-nosed bullet of that bore and file the tip till the tiniest pin point of the inner lead is exposed, no more. I have found this bullet far more deadly than the soft-nosed of the same bore, and yet it does not tear the meat and skin about as does the soft-nosed. It is not so easily deflected on striking bone, and it mushrooms far better than the soft-nosed. I have found the latter, from the average light rifle, prone to expand too quickly, tearing to ribbons instead of mushrooming up well and driving forward like a man's clenched fist.

This opinion is based upon a study of many scores of bullets of both soft-nosed and filed types, cut out of animals I have shot. In the case of the heavy bore, the soft-nosed bullet, being heavier, does not tear up as the light soft-nosed one does, but mushrooms nicely.

The split bullet I have used, but do not care for. In light rifles it disintegrates far too rapidly after impact—worse than the soft-nosed does—and loses greatly in penetration and killing power.

The hollow-pointed, or dum dum, is quite a good bullet as regards killing power, but I do not like them owing to the danger there is of the lead core blowing out through the hollow point, leaving the nickel casing sticking in the barrel, with dire results at the next shot.

As regards sights on rifles, there are many different kinds on the market, but there is only one kind that is any practical good for

big-game shooting. That is the widely opened V back-sight, with a fine silver center line at the bottom of the V; and the small ivory or silver tipped bead fore-sight. Peep sights may prove very effective on a range, where there is plenty of time to adjust them, sight, and fire, but they are of no use whatever for quick game-shooting. The telescopic sight may be very useful for light rifles for shooting small antelope in open treeless plains, where long shots are necessary owing to utter absence of cover, but in the forest country, where I have done all my shooting, they are never seen. There was no need for them, as all the shooting was done at short ranges.

Rifles are fitted with several leaf back-sights, for use at longer ranges than the fixed 100-yard back-sight. Personally I never used the leaf sights. If the range was over 100 yards, I simply took more fore-sight.



Buffalo bull, and .450-400 double Express rifle

The great catch in the matter of the use of leaf sights is that the hunter is liable to put up, say, the 200-yard sight, and forget to lower it again before the next shot. He fires his next shot at, say, 70 yards, and the bullet flies high over the back of the animal fired at. Using the fixed 100-yard back-sight, I found it needed very little practice to judge how much fore-sight to take, and the above-mentioned danger of forgetfulness was obviated.

In shooting in the forests of Central and South-Central Africa, especially in the case of heavy game, a shot at over 100 yards is a rarity. Even if game is seen at some distance, in some more open space than usual, I think that, unless under very exceptional circumstances, it is not playing the game to fire at ranges much over 150 yards. The liability of a wound instead of a clean kill is too great. Also, to myself, one of the greatest charms of shooting in fairly open country is the stalk; pitting one's wits in the way of ability to take cover, quickness in seeing when the grazing antelope is about to raise his head, and consequent quick freezing into immobility against the wonderful hearing and eyesight of the wild. In stalking, of course, great care must be taken to approach up-

wind—a whiff of scent carried to the keen noses of game sends them off at once. There is a great deal of satisfaction in a long and arduous stalk—hands and knees work, and belly-wriggling, and the single clean shot that kills instantly. Many, many times I have stalked up close to game simply for the pleasure of lying "perdu" and watching them feed, without thought of shooting.

Some rifles of the magazine type are fitted with a double pull of the trigger—a long first pressure, and a second sharp firing pressure. Personally I like the ordinary single pull, but that is a matter of custom and taste. Some people prefer the double. What I do not like, however, is a gadget fitted to some Mauser rifles. Two triggers are fitted. If the front one is pressed, the back one becomes a hair trigger. The danger with this contrivance is that a man may pull the back trigger, and be about to shoot with the

front (now hair) trigger, when the buck canters off. He follows, forgetting the rifle is now on the hair trigger. The rifle can easily be put *in statu quo*; but it is easy to forget to do this. The hunter follows his quarry; the slightest jar or touch of a twig, and off goes the rifle! Most dangerous, I consider. I have known several men who have had these rifles, and they had all removed the setting trigger for safety's sake.

A good rifle needs careful cleaning immediately after returning to camp, after having been out shooting. This is most important. The Armourer-Sergeant's instructions, "Take as much care of your rifle as a mother does of her baby; clean it, and rub it over with an oily rag every day," is an excellent maxim, though it may have its humorous side in the matter of simile. Careful cleaning means everything to the shooting of a rifle. Not only must it be cleaned after firing, but, in case no further shots are fired for a day or so, it must still be cleaned again, as Cordite has a trick of sweating out of the steel, and, if left, will rust and rot away the rifling. A really good rifle is a masterpiece of the craftsman's art, and should be treated accordingly.

I knew a man once that used to boast that he never worried about cleaning his rifle. Again and again I told him he would be sorry some day; his rifle would jam at a critical moment. One day he shot at and wounded a lioness. The lioness charged and the rifle jammed. One stroke of her paw practically disemboweled him. She then dragged him some miles. His nonreturn caused alarm in the camp, and his companion, taking some

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A UNIQUE RIFLE RANGE - BY CAPT. J.H. PLATT

A RIFLE RANGE flanked on one side by a flower garden and on the other by rows of poplars and box hedges, where the firers shoot from the brow of a hill commanding one of the fairest views in the State of Maryland, and between strings rest in a shady pavilion where week-end guests watch matches from armchairs. No, Rollo, this is not a sand-rat's dream; it is a marvelous reality to hundreds of fortunate folk who have visited Glenelg Manor in Howard County, Md.

The manor is the country seat of W. Bladen Lowndes, of Baltimore, and the range is the result of seven years of devoted labor on the part of its owner. It is safe to say that there is no more beautiful range in the country. One might even go further and declare it to be one of the few ranges in the world with any pretensions to beauty. For obvious reasons the average rifle range is far from a garden spot. And this alone gives the little range at Glenelg a distinction aside from the really important work that has been done there to keep alive the ancient and honorable sport of marksmanship.

Seven years ago Mr. Lowndes became interested in shooting. There was no range near his summer home at that time; but his ample acres contained plenty of room for one, and he had enough sons to get up an interesting match without going outside the family fold. At first he and his sons fired with Army Springfields at targets placed on easels. The pit detail got behind trees during firing, and popped out with their disks between strings. But from the beginning sound doctrine ruled. There was no hit-or-miss shooting. From nearby Washington competent coaches of the Army and Marine Corps were always available. It was never necessary to search for volunteers for these jobs, for anyone who once enjoyed the hospitality of the manor was always anxious to return.

Gradually friends of the Lowndes boys formed the habit of spending part of their summer vacations at Glenelg. Soon there were enough of them to apply for an N. R. A. charter, and the Glenelg Rifle Club was born. Then, during a large house party, several girls insisted that they, too, be allowed to try their skill on the range. Under the approving eye of Mrs. Lowndes they soon showed the boys that "equal rights" meant equal scores. Today there are several girls in the club who can turn in cards that would not be sneered at in Camp Perry itself. This summer the club team included two girls, who fired in winning matches against two National Guard teams and gave a group of Marines a real run for the prize money.

The shooting season at Glenelg opens late in July and continues for three weeks. The boys are quartered in a big dormitory with its own living room, in a building located far enough from the family residence so that the exuberant marksmen need have no fear that their evening's rough-house will disturb the

family. The girls are the guests of Mrs. Lowndes in the manor itself. From the first day of training to the final shot in the last match, the coach is king. Work usually begins at 8 in the morning, and frequently continues until dinner time at night. The schedule of instruction follows as closely as possible the famous Small-Arms School which Capt. Walter Layman conducts at Perry. The little range is run with the same regard for regulations that prevails at Perry or Sea Girt or Wakefield.

Matches are arranged with neighboring clubs and with teams made up of Maryland Guardsmen or Marines. Every match attracts a large gallery, many of whom are house guests of Mr. and Mrs. Lowndes. The spectators view the contests from a canvas-covered pavilion set just behind the firing line. Few club matches, aside from the big State and National contests, can boast a more interesting audience. Ranking officers of the Army and Navy—men and women whose names mean much in Washington and Baltimore—are frequent visitors to the Glenelg matches; but everyone, great and small, enjoys the same generous hospitality.

To the casual visitor the range may seem to be merely a place where riflemen strive for high scores amid pleasant surroundings. But all the labor that has gone into the creation of the course and the training of its teams is dedicated to another and far different mission. A surprising mission. A mission that might well be taken up by others who have the good of the younger generation at heart. Mr. Lowndes is not primarily interested in scores, although these grow higher every year. The range and the club are dedicated to the building of character. The host of Glenelg Manor is convinced that marksmanship, properly supervised, is unexcelled in developing habits of

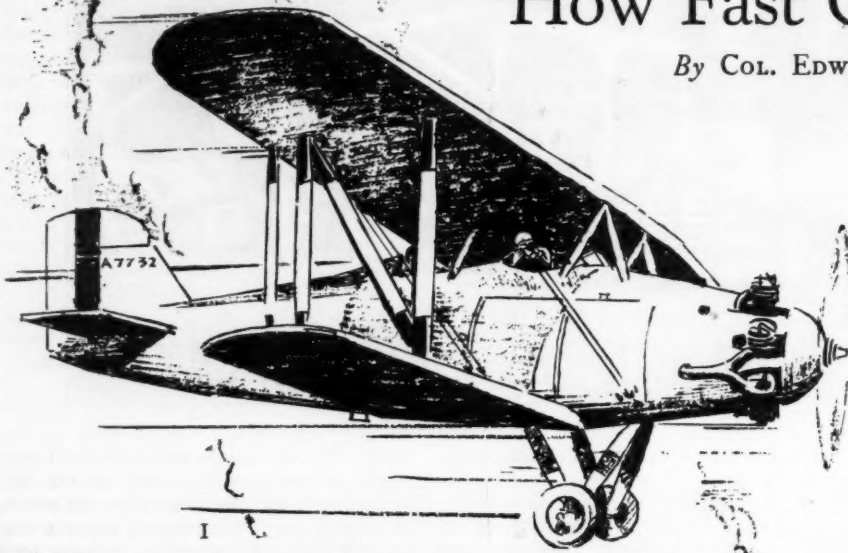
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Glenelg Team.—Left to right, standing: Arden Lowndes, Roland Voorhees, Upshur Lowndes, Edward Inman. Kneeling: Miss Virginia Watts, Christopher Lowndes, John Brydon, Miss Katherine Watts

How Fast Can Ducks Fly?

By COL. EDWARD L. MUNSON



IN THE ballistic problem of the wild-fowler the speed with which his target propels itself is obviously a matter of fundamental importance.

A flying duck, except at the closest ranges, or as an in-comer or out-goer at the same level as the shooter, will not be hit by a charge of shot aimed directly at it. The velocity of shot, while great, is of course not instantaneous; and it takes an appreciable fraction of time for the pellets to pass over any given distance. This period of time is lengthened not only by addition to the distance but by the progressive falling off of velocity of the shot as it meets with more and more air resistance. At ranges beyond 50 yards the importance of this time factor increases disproportionately. The speed of the bird may continue the same, but the velocity of the shot, which at such distances have already expended much of their original energy, falls off rapidly.

The normal flight speed of a duck is so swift, that, in any considerable fraction of a second, it has carried the bird through a space of probably many feet. In shooting over all but the shortest ranges, the shot charge must therefore be placed not where the bird is at the instant the cartridge detonates, but where it will be when the cloud of pellets intersects its line of flight. This necessary adjustment is a matter of swinging the gun with and ahead of the bird; or, in the other style of shooting, of directly pitching the shot ahead of it into the proper space. The accuracy with which this is done determines the matter of a miss or hit.

But the ballistic problem of wild-fowl shooting, particularly at the longer ranges, is complex. Further, the components which enter into the placing of a successful shot seem not well understood by the average duck-hunter—or if vaguely realized, are not properly evaluated or applied.

In an article in the *RIFLEMAN* for March,

1929, I endeavored to point out and discuss the basic factors that must combine to make the duck-hunter's hits, and to substitute demonstrable facts for the faulty hypotheses, broad generalities, and misconceptions that, for the average hunter, enter his duck-shooting equation. Most of the matters discussed in that article were based on definite and positive findings. It is not necessary to repeat their details here, but it may be of advantage to cover them by a brief summary.

Matters that relate to the gun and load obviously stand in a class by themselves. What the gun can be relied upon to do can be determined by a few shots at targets at varying distances. The pattern that such a gun and load will make is merely a matter of trial and observation. As to the load itself, its best combination for the individual gun, at the ranges contemplated, can be proved by simple comparative tests. The best size of shot to use is shown by ballistic tables, and can be checked by observation. The velocity with which the shot from such a load pass over any given distance has been mathematically determined and tabulated. The period of time required for the passage of such shot has been shown by the chronograph. The vertical drop of such shot load has been measured. The residual energy of each shot pellet—that is, its striking force or killing power—has been mechanically demonstrated. All in all, the gunsmith and ammunition-maker have combined to furnish the duck-shooter with an instrument of precision. Not only that, but they have furnished him with definite information as to its powers and limitations. It seems beyond argument that if the duck-hunter will take the trouble to learn and apply to his shooting the definite facts above enumerated, it will be very helpful in increasing his percentage of hits.

It was also shown in that article that there are next two factors which the shooter must himself evaluate. One is the distance of the bird at the instant of shot, which with practice can be subconsciously estimated within the limits of negligible error, another, since different species of ducks vary between themselves as to flight speed, is identification of the variety which is the immediate target, which presents no difficulty to those possessed of a modicum of ornithological knowledge.

Up to this point, therefore, it has been shown that the wild-fowl shooter has it in his power to make use of nine exact factors, and one almost as definite, as contributing to his success.

What then remains for his consideration?

There are but two remaining factors. One is the flight speeds of different varieties of ducks—that is, the rate at which their own efforts propel their bodies through the atmosphere that supports them. The other is the movement of the atmospheric mass in which the duck itself is flying—that is, the wind—as this may operate to accelerate or retard the swiftness with which the bird passes the shooter.

It is these two factors—the air speed of the duck and the rate and direction of movement of the atmospheric movement in which it flies—that combine to determine the ground speed of the bird. This resultant ground speed is of basic importance to the shooter, for it is upon the swiftness with which the moving target passes over the earth's surface that the extent of the lead necessary, for the same ranges, must depend.

But on this matter of ground speed the shooter has no ready-made information on which he can rely. He must make his estimates and decisions for himself. And I repeat here what was stated in my former article—that such decisions are made accurately by such repeated observations and practice that they are ultimately moulded into habit, and so become not only subconscious but practically instantaneous.

In my former article, the ground speed of ducks was treated as a matter of estimate. Since that time, I have endeavored to analyze ground speed, and evaluate its two components. It seemed practicable to remove at least one of them—the air speed or flight speed of ducks—from the realm of speculation, and by actually measuring it to place it on a basis of demonstrable fact. The steps that led up to definite findings in this respect form the subject of this paper.

II

A certain amount of investigation as to the flight speed of birds in general has been done by naturalists. This may fairly be said to be fragmentary and incomplete, and some of it unreliable. More, while the results obtained might be trustworthy for the conditions

of the moment, the unthinking assumption that they might be equally applied to other, and perhaps quite dissimilar, conditions has habitually resulted in grave error. A common cause for this error is failure to differentiate between air speed and ground speed.

Gatke, studying the autumn migration of birds on the shore of the North Sea, worked out an ingenious method for determining their rate of movement over the surface of the earth. He used a powerful astronomical telescope at night, by which migrating birds flying between the observer and the moon could not only be readily picked up but their species identified, their distance above the earth measured, and the rapidity of their flight, as shown by the time required to pass across the telescopic field, accurately determined. His observations indicated that birds are able to fly in the rarified atmosphere at an altitude of 5 miles above the earth, and at that level are capable of attaining a speed of 186 miles per hour over the earth's surface. Further, that this speed applied to even the smallest birds.

Gatke's figures were doubtless correct for the conditions under which they were made, and were so accepted by the scientific world. But in attempting to apply them generally the mistake was made of overlooking the fact that the speed of a bird over fixed objects on the earth may be, and usually is, quite different from its rate of progress through the atmospheric medium that sustains it. Further, in attempting to apply Gatke's figures to the speed of bird flight visible to the naked eye, it was also overlooked that atmospheric density and resistance at lower levels would reduce air speed, so that flight velocity would bear definite relation to altitude. It is a matter of common observation that at the surface of the earth no bird could propel itself at the tremendous speed noted by Gatke—that is, about 3 miles a minute.

Finally, the fact was ignored that migrating birds as a whole habitually take advantage of favoring air currents when they move over long distances, and that the strong winds of high altitudes furnish an unquestionably greater part of the motive power that wafts them to their destination with relatively little expenditure of individual energy.

I have personally seen birds habitually take advantage of such favoring winds for their migrations. Many years ago I used to hunt bay birds on Cape Cod in the late summer. The curlew and plover that massed in great flocks on the shores of Labrador waited for favorable winds to carry them to South America over a course that lay several hundred miles out to sea. Local hunters had little shooting at these birds unless, in late August or early September, there was an easterly storm, when the birds were blown off their course and onto the New England beaches in myriads. Later, in Montana, migrating waterfowl, particularly geese, used to accumulate in immense numbers in the vicinity of Cascade, waiting for a favorable wind to carry them over the Rockies. When such a wind occurred the mass of birds took wing, and the individual flocks followed each other

in procession over the pass that led southwest over the mountains. Again, in Asia, snipe aggregate in vast numbers on the China coast and wait for favorable winds to blow them over the sea to the Philippines. One day there will hardly be a straggler in the islands—the next, with a favoring wind, they will be there in unbelievable numbers. Once I saw such a migration wave of snipe arrive. The tail end of a typhoon was just blowing itself out, when a cloud of snipe passed over about sunset. The front of the flock was as broad as the eye could see, in density it looked like a cloud of smoke, and its length was such that, even with a gale behind it, it took about five minutes to pass over. The next day, in Cavite Province, just across Manila Bay, snipe were reported in vast numbers where previously they had been absent.

Various estimates as to the flight speed of birds have also been made by comparing the speed of birds flying parallel to railroad trains, and more recently with automobiles, with the rate of movement of these wheeled vehicles. Here again the accuracy of the findings can fairly be challenged, for the conditions in both cases are not the same. One can not justly compare the speed of a bird, necessarily affected by the direction and velocities of the wind currents in the gaseous medium in which it travels, with that of a conveyance driven by friction against the earth and having a ground speed regulated by an engine irrespective of atmospheric movement. For example, if a dove flies down the road against a head wind blowing 20 miles an hour, and the speedometer of a following automobile registers 30 miles an hour, the bird is moving above the ground at 30 miles an hour but passing through the air at 50. On the other hand, if the same wind came from behind to help, the bird would pass over the earth at 70 miles an hour, though its air speed would still remain at 50 miles.

Note has already been made that the air speed of birds is not without its own variables. Such exist between species, and each has its own individuality as to flight, as in other respects. Crows, for example, as everyone knows, travel much more slowly than ducks. And even for the same genus, as the duck family, considerable difference between varieties as to flight speed is recognized by hunters. It is also true, of course, that individual birds, of any species, can voluntarily alter their rate of air speed up to the limit imposed by their physical structure and maximum output of energy, and down to the minimum velocity at which the gaseous medium in which they fly will support them. Between these two extremes it seems more than probable that each species has an average or "optimum" velocity at which it tends to meet and overcome air resistance. Let us briefly consider the above points.

That there must be an irreducible "minimum" for the air speed of birds is obvious. The requirements as to maintenance of motion for the fowls of the air are quite different from those

in the case of beasts and fishes, which can loiter along, and even stop, without regard for the law of gravitation. It is true that certain birds, like hawks and buzzards, can soar aloft on motionless wings, but this is only because they use the force of ascending air currents to lift and move them instead of the energy within their bodies. But to most genera of bird life the ability to soar is denied—and this is certainly the case in respect to the varieties of waterfowl that are here considered. The bodies of non-soarers, being heavier than air, can support themselves in that medium only by a definite rapidity of flight. If the minimum velocity attained by a bird is less than the air speed required for its support, the bird has to descend—just as an airplane whose motor does not properly function must glide down or fall. Every hunter has seen a wounded duck struggle away at a gradually decreasing speed until the latter sinks below the velocity at which the bird can hold the air, when it abruptly loses altitude and equilibrium and falls helplessly.

We do not know the minimum speed required by each species to maintain itself in the air, and there seems no way of determining this unless it could be mathematically calculated by aeronautical engineers. However, to the shooter this matter of minimum air speed is not a matter of ballistic importance.

But somewhere above the minimum speed at which the bird must move in the atmosphere in order to maintain itself, it seems reasonable to assume that it has, for its species, a normal or optimum velocity. This would be an air speed reasonably in excess of the minimum requirements to overcome gravitation, thereby furnishing a margin of safety in excess of the down-pull of gravity. No such surplus requirement seems necessary to offset the forces of nature on ground or water creatures; the relative speed at which these move depends on the stimuli of environment, and their safety does not necessitate that they be geared up to any particular rate of travel.

But in the case of flying things their movement through the air, for each species and for sustained flight over all but the shortest distances, seems to work out into an average or optimum velocity. This can be seen in the great duck migration from the north that sweeps down on the marshes in the November sunset, and which comes in with its group units, if of the same species, following each other with little change of in-

(Continued on page 27)



The Brownlee Bolt Lock

By JESSE E. BROWNLEE

ABOUT all one has to do these days to attract attention, whether it be in a squad tent at Lake Erie or in a miner's camp on Santa Fe Baldy, is to make some reference to the "Thirty-Oh-Six" or its dolled-up brother.

The mere suggestion of an improvement on the bolt of the Springfield or Krag will arouse the interest of the riflemen generally, and particularly the readers of the *RIFLEMAN*. The invention of which we wish to inform the boys bears Serial No. 83,692 of the Patent Office, and is a bolt lock for bolt-action firearms. (The wide-awake editor of the *RIFLEMAN* having heard of the device and the favorable comment it has caused in the hill country of New Mexico, and having heard that the invention is to be given free of charge by the inventor to the hunters of America, has asked for full particulars.)

Before you have read thus far, you have grasped the idea from the illustrations, and have probably asked yourself why you did not think of it twenty years ago. It is well, however, to give the amateur gunsmith more detailed information, and perhaps save the price of a spoiled bolt.

The bolt lock is intended for use on all bolt-action rifles and shotguns. It consists of a lever along the back side of the bolt handle, a plunger on the bolt knob with coil spring to hold it in position, and a latch which passes through the bolt handle and into a corresponding hole in the receiver.

While the bolt-action gun is almost ideal for hunting big game in the mountains and deserts, when carried on the saddle, or in the brush, the bolt handle sometimes becomes slightly raised, causing a misfire on the succeeding shot. It is almost impossible for a man in the presence of game to pay attention to detail, particularly when a buck jumps from a clump of live oaks, bounds high into the air two or three times, and is gone from sight. Therefore, such little details as feeling to see if the bolt is closed, the safety off, the magazine cut-off turned up, and scope screws tight, must be omitted if you are to get in a shot. Bucks have a habit of jumping when some of these, and other things, are not right; so it is all-important to be prepared. Pardon

my digression to suggest that the best position for the magazine cut-off is in the bottom of your tool box.

A careful study of the illustrations herewith will convey to most readers a general idea of how the device looks and operates, and to a few the pictures will mean more than terms and statements as made by a Santa Fe lawyer to the Commissioner of Patents. We will get down to facts about as did a dark-skinned son of Ham with the A. E. F., who pretended to read the menu in a French café, and then told the waiter to "gimme some ob dat air," as he pointed to another soldier's plate which was filled with fried chicken.

The lock can be made in any amateur workshop containing a small bench drill, hack saw, files, vise, and clamps. However, it is far better to have the slot and the two holes in the bolt handle cut by power machine. The slot is the width of two hack-saw blades, and may be made by breaking off two pieces of blade an inch long and clamping them together with a small clamp, which will serve as a handle for the small saw, which will cut the slot; but it calls for hours of work and should therefore be avoided.

The working model was made and used on a Krag rifle, and the measurements given here are as used on the Krag. As the parts for the present must be handmade, the sizes may vary to suit the individual and his stock of drills. The lever carried in the slot along the back side of the bolt handle is approximately 1 15/16 inches long, 1/16 of an inch thick, and 7/32 of an inch wide. The diameter of the hole for the latch is 3/16 of an inch. The diameter of the hole in the bolt knob for the plunger is 1/4 of an inch. The hole for the plunger is drilled deep to seat the coil spring beneath the plunger; but care must be taken to avoid drilling clear through the knob. The hole for the latch is 3/16 of an inch from the hole through the center of the bolt, measuring between the closest edge of each hole.

The hole in the bolt knob should be drilled first. It should be drilled from the back of the bolt, and extend about four-fifths of the distance through the bolt knob, parallel to the axis of the bore of the gun.

The hole for the latch should next be drilled through the bolt handle, and parallel to the hole in the bolt knob. The slot connecting the two holes should then be cut. It should be approximately 7/32 of an inch deep near the bolt knob, and about 1/4 of an inch deep at the end where the latch hole is bored.

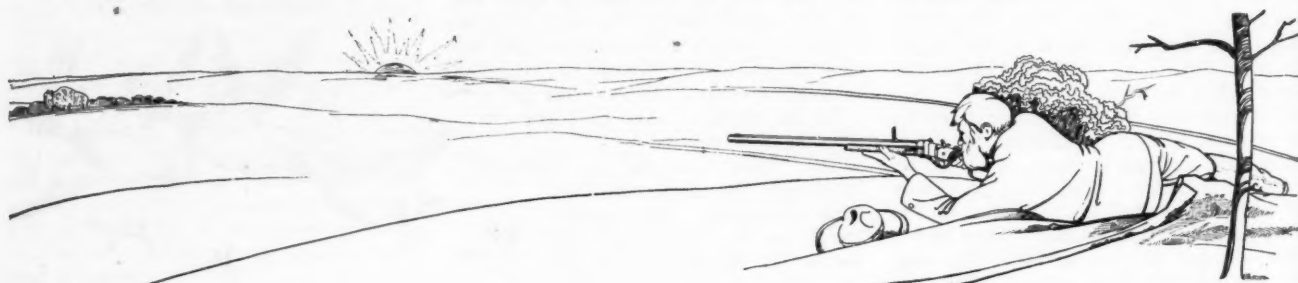
The plunger, latch, lever, and pins should be made from steel, and fitted to the bolt. A small coil spring can be bought at the hardware store, and cut to the desired length. The holes in the ends of the lever bar should be oval in shape, for the reason that the lever moves in the arc of a circle, while the latch and plunger move tangent thereto.

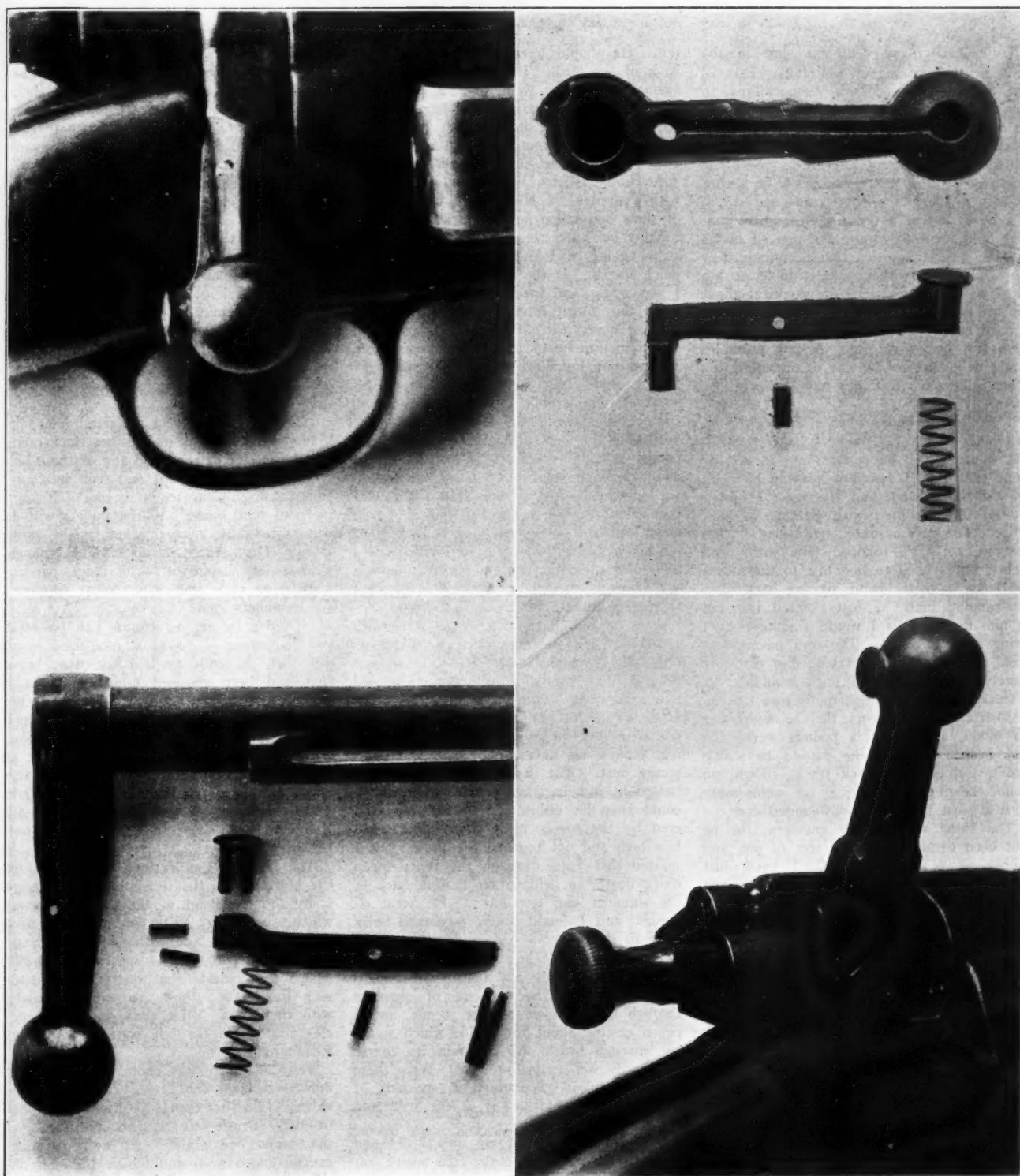
It is very important when drilling the hole for the latch in the receiver that this align perfectly with the latch carried on the bolt handle, when the bolt is fully closed. Therefore, this hole should be drilled after the lock is completed and assembled on the bolt. A little Prussian blue on the latch will serve to mark the spot where the hole is to be drilled in the receiver.

The device installed, all that is necessary to release the latch is to grasp the bolt knob in the palm of the hand, as in rapid fire, and press slightly forward as the bolt is raised. Therefore, there is exactly the same movement of the hand in operating a gun equipped with the lock as there is with the rifle "as issued."

It is optional with the owner of the gun whether the latch be made with a flat face or with a spherical face. In case the former is used, the bolt can not be opened unless the plunger is pressed to release the latch. With the spherical face, the latch can be opened in the same manner as before; or, by lifting the bolt handle without touching the plunger, the latch is automatically withdrawn from the hole in the receiver. For absolute reliability, whether in the saddle or on the shoulder, the flat-face latch is the better.

The writer, who is the inventor of the lock, donates the invention to the hunters of America free of any charge or claim for royalty. You can make the device or have a gunsmith make it for you. We stipulate, however, that the device be known as "The Brownlee Bolt Lock."





Top row, left: The Brownlee bolt lock as it appears in the locked position. Right: Lock ready for installing in bolt. Bottom row, left: A view of the component parts of the lock. Right: Krag carbine with bolt handle raised, showing the principle of the Brownlee bolt lock

Getting a Bullet Through the Brush

By CHAS. ASKINS

A GOOD many deer are shot in the brush, speaking of whitetails. Fact is, the Virginia deer doesn't seem willing to remain anywhere else except in the brush, or at least in timber. The blacktail is different; but we are not going to talk of blacktails today, or of mule deer. Now the question is, How many deer have been shot at with a rifle in the brush, and escaped?

I have shot at a few myself, mostly running, and for a long time assumed all blame for the misses, knowing that a running deer can be missed without any trouble at all. Some of the misses made me skeptical about the bad holding. Furthermore, I put in many a hard hour tracking deer that should have been hit, but were not. A few examples might be given, just by way of reminding the other fellows of what may have happened to them.

I was in the woods when a big buck came galloping over a hill, down a path right in the open. The buck saw me about the same time that I saw him, planted his feet, plowed the ground, and stopped. I had a .30-06 rifle, mounted with Belding & Mull scope. The deer hesitated quite long enough for me to have snapped him with open sights, but I tried to find him in the scope. He made a great bound, passing back of a low-hanging limb. I just pointed the gun at him the same as I would a shotgun at a flying bird, and shot. The deer never wavered, flinched, or did anything else that any merely badly frightened buck wouldn't do. I tracked him far enough to be sure that he was striking on all fours, that he was losing no blood, and that his bounds were long and even. Presently he paused to stamp about, watching his back track. Then, no doubt hearing me coming, he went away with a great bound—an unwounded deer.

The thing was a great mystery, for he had been within a hundred feet of me, and looked as big as a house. I knew just where I had stood and just where the deer had been in the air when the shot was sent for his shoulder. Going back, right in line with the deer's position, I found that the bullet had clipped a twig about as large as a man's thumb. The deer had been 30 feet back of that twig, and the bullet never touched him.

Again, I was crossing an abandoned field, open except for an occasional oak bush. Someone else frightened a small buck, and on he came, headed to pass me at 70 yards. As luck would have it, and as often happens in quail-shooting, just when I had him covered that deer, holding under his neck, he passed right back of a little bush no more than 5 feet high—thin-limbed so that you could see right through it, and the only obstruction along the way. The deer was not hit. Investigating, I found several small twigs cut, right where I had held—whether the deer had been back of there or

not. He should have been about 10 feet back of the bush. I couldn't shoot at him again, because he went over a little rise. The rifle was a 7-mm., with 139-grain bullet. After the fashion that hunters have, who think they can shoot whether they can or not, I saddled the blame on the bush.

A third instance was when deer-hunting with a Savage .22 Hi-Power. A light layer of snow had fallen, and I tracked the deer. Finally he broke out, not over 40 yards away, going with high, easy bounds, not much scared. At the top of his third bound I was ready, and fired, notwithstanding that some thin brush intervened. It was shoot then or never, for a few more jumps would take him into heavy timber and underbrush. But do you know what that fool deer did? He stopped right there and stood broadside. I took a deliberate aim, took up on the trigger about all it would bear, and the next time the sights came on, squeezed that trigger off. The deer went off as if the devil were after him, but ran only about 150 yards, where I found him dead. The first bullet had barely touched a limb, but had never touched the deer.

Last winter in New Mexico, while snowed in, I ran out of dog feed and had to shoot a wild horse. I hate to shoot horses; but there was no help for it, since the four dogs had to be fed. The rifle was a .276, with 175-grain 7-mm. Western Cartridge Co. boat-tail bullet; velocity 2,800 feet. There was no particular trouble in hitting a big animal like a horse at 300 to 400 yards. I stalked up to within 200 yards of the herd, sat down with one shoulder leaning against a big pine log, elbows on knees, and shot from this secure rest. The horse, meantime, had passed in just back of a low sagebrush. I could have hit either end of him not covered by the brush, or I could have taken him high and not touched the brush; but I wanted that horse through the heart for a quick death, so held to get him in back of the shoulder and low down. He went off unhurt, and I found a few sagebrush twigs lying in the snow.

The story might be extended, for I have hunted a good deal, and usually with high-velocity rifles. The problem of shooting through brush looked serious to me, and I began casting about for a rifle which would cut through brush and maintain its course sufficiently well to insure a hit. Were there any such rifles? I doubted it, speaking of rifles with a velocity of 2,700 feet and better.

This thing concerned me, practically and theoretically. I went to the rifle books, but these did not tell me much, they rather dwelling upon accuracy, flat trajectory, and energy, all of which I had without helping me any in cutting through brush. Old-timers told me to go to the .45-70-500, which brush couldn't stop. I believed them;

but I'd had my experience with that old rifle, and had no intention of shooting it again. Roy Riggs said a lower velocity would help; and Frank Kahrs told me to try a Remington .35 caliber. I got the Remington .35.

Meantime I had been projecting in a more or less miscellaneous way. I found that I could take one of my rifles and shoot right through the side of a tree, just cutting in the width of the bullet, and that bullet would go right on and slam into another tree. I found that I could cut through ordinary green limbs, green leaves, and twigs, and usually hit something back of them with a .30-06 rifle having a 220-grain bullet. The 7-mm. loaded down to 2,100 feet, usually did the same thing. The .22 H. P. and the .250 bullets might disappear under the same conditions. The .35 Remington got through this test undisturbed.

It is all a rather queer problem. You take a thin piece of steel, or a rather thick piece, for the matter of that, and any of these bullets will bore through it and slam into anything that happens to be beyond. Take a piece of hard wood, and the bullets will do the same thing, though they might upset more. That didn't mean a thing, though, when bullets happened to hit twigs, particularly more than one twig. What happened to the bullets then?

In order to get a definite line on what was happening, I found a good-sized brush pile with the ends all laid one way, brush that had been chopped and piled over a year. Some of that brush had limbs 2 inches thick. I now put up a target with a 3-inch bull, 30 feet back of the brush, took a position 35 yards from the brush, and shot at the target. The guns were a .30-06, with 180-grain bullet, a 7-mm. with 175-grain bullet, and a .35 Remington, using both Remington and Western Cartridge Co. bullets of 200 grains.

The position was sitting. I couldn't see the bull through the brush but could locate it by the remainder of the target, some of which was in sight. The 7-mm. was mounted with scope sight, and with it the bull could be seen. The target speaks for itself. Those shots inside the squares were made with the .30-06; those marked by crosses, with the 7-mm., while those inside the circles and within the bull were with the .35 Remington.

The .35-caliber was shot first, and fairly mowed through the brush, cutting a path, so that I had to change positions from shot to shot. Brush was cut and splintered, yet the bullets maintained a pretty straight course, and a deer would have been hit another 30 yards farther away. The .30-06 did the worst, the bullets all tumbling, and not striking where they were aimed. None of them went to pieces, but at how far a distance beyond the brush these missiles would have struck the deer, is a problem. One of

the 7-mm. bullets went true; the other two struck sidewise. I then fired two shots from the .22 H. P., and never did know where these bullets went.

What follows is merely a deduction, and my own conclusion. Anybody who disagrees with me has the usual privilege. Captain Curtis wrote me that he believed the .35-caliber was the best deer cartridge for use in the brush now obtainable. I think he is right.

We have been pretty much carried away by the desire for velocity and power. We can imagine ourselves shooting deer at 300 yards, and we do not want a rifle that is liable to miss by undershooting or overshooting. Looking back, however, I do not remember ever having killed a deer at over 200 yards, and at that distance the only one shot was with a .45-70-405, which would drop around 2 feet at the distance, using black powder. The others have all been shot between 50 and 150 yards. Flat trajectory never made a particle of difference in any of this deer-shooting. All of my deer have been shot in the woods, or in brush and cactus.

Now, I am quite willing to admit that my high-speed and powerful rifles might be the right thing in mountain shooting, particularly on blacktail deer, so called. These are sometimes seen far away across a canyon, or again may break from some wooded gulch and then run for two or three hundred yards up and across some ridge. You need a 3,000-foot velocity rifle then. However, just now we are talking about a rifle for deer-shooting in the woods and brush; such shots as we might obtain in the East, in the South, in Arkansas or Texas.

Unless a man is a better deer-hunter than I am, about two shots in three will be obtained running. Half the time there will be no such thing as waiting for an opening to shoot through, but the shot must be snapped-in just as quickly as the deer can be covered, because the bound in sight may be the last one so far as you are concerned. I remember shooting at a deer down on the Nueces River in Texas. A companion yelled to me that the deer was coming. The cactus was as high as my head, and so thick that the only chance to get through was along deer and javalina trails. When opposite me and about 40 yards away, the deer rose above the growth, in two great, curving bounds—a veritable picture deer. The first bound warned me, and on the second I covered him just as he settled into the tops of the cactus. I was fairly on the broadside of him, and low enough to catch a dropping mark. I never saw that deer again, and he wasn't hurt. The rifle was a .250 Savage. Thirty minutes later, under fairly similar conditions, a boy who had never before shot a deer, killed one

with a .30-30 Winchester. I think that I'd have bagged my buck with a .35-caliber.

Of course, our powerful rifles are all right, if they will cut through brush. I believe that a .30-06 with 220-grain bullet, loaded down to 2,000 feet, would do that most of the time. I doubt, though, if the rifles with a velocity of 2,700 to 3,000 feet are going to get through brush without being upset, deflected, tumbling—not striking where they were aimed. Energy is of no use to us unless it lands on the mark.

My idea of a woods rifle is, first, that the piece must be light, so that it can be carried at the ready, precisely like a shotgun when a quail is expected to flush. When a deer breaks cover he is to be taken through brush, weeds, cane, cactus—anything through which he can be seen—and the shot pulled in less than a second. If that shot fails, another cartridge is to be in the chamber in

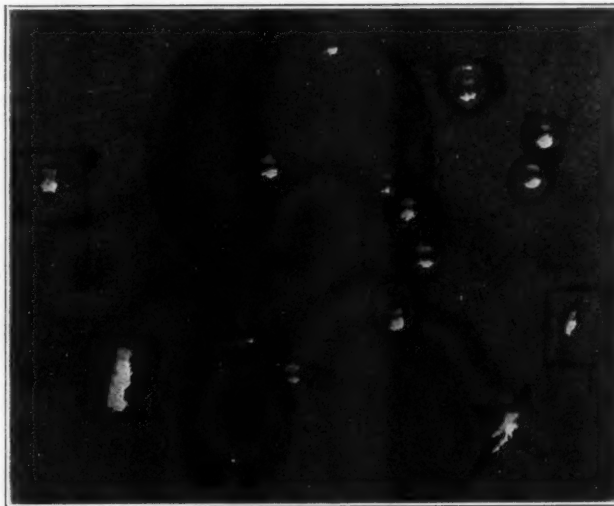
selves about it; and the heavy bullet is most likely to pass entirely through a deer, dropping him in his tracks or leaving a heavy trail of blood.

That bloody trail is to me of prime importance, because in running shooting I am just as liable to hit a deer in one place as another. If he bleeds freely I'll get him eventually; if he doesn't bleed or show other signs of being hit, he will escape, though he may be dead within half a mile of where he was shot; hence my desire for a rifle which will not only cut through brush, but cut through the deer. A few seasons ago my companion shot a noted buck—noted for his tremendous horns. The buck jumped within 50 feet of the hunter, just cantering off. Dropping on one knee to see under the brush, my friend shot deliberately into the rear end of that deer. The rifle was a Krag, 172-grain bullet; the point of the solid bullet sawed through crosswise. The deer went off fast, of course. We tracked him for half a mile, and could see no evidence that he was hit. A week later, pretty well eaten up by coyotes, that buck was found less than a mile from where he had been shot. The man who found him took the horns. The shooter never got another shot that season. It is a fair guess that if he had left his bullets alone, and shot them with solid point, the missile would have gone clean through that deer and out at the front end, either killing him right on the spot or making recovery easy.

Now a word about the target-shooting through the brush pile. The odd thing about it to me was that the bullets tumbled. I expected them to be upset, and perhaps the jackets shattered; but I didn't expect them to tumble end over end. I suppose that one twig would deflect the bullet, and the next would check the spin; after which the bullets went on, either end to. It is not my experience that tumbling bullets hit anything much, and at 100 yards they may strike 10 feet from where they were held. Anyhow, I have had my confidence in high-speed rifles considerably upset, when the bullets have to pass through brush.

NOTICE

BECAUSE of the necessity of covering the National Matches in our October issue, this issue is always late. May we kindly ask that our readers spare themselves and us some trouble by refraining from writing in about their October magazine until after about the middle of the month. If by this time any magazines have not been received, the matter had better be brought to our attention.—THE EDITOR.



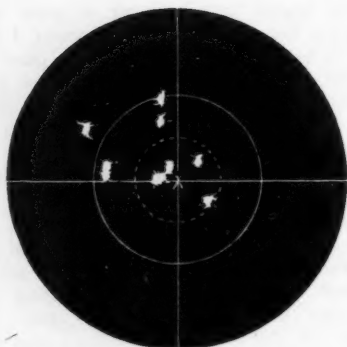
Target shot at 45 yards through dry brush. Squares mark .30-06 holes; crosses mark 7-mm., and circles show the .35 Remington bullet holes

half a second or less. The rifle needs to fit like a shotgun, for no adjustment to the sights is possible. With young eyes, open sights are as good as any, the front bead being ivory, not gold, and $\frac{1}{8}$ inch in diameter. You want to know where that bead is without looking at it.

Living up to such convictions, then, I procured a Remington slide-action rifle for the .35-caliber cartridge. The weight of this rifle is given at $6\frac{3}{4}$ pounds, and I suppose it weighs no more than 7 pounds with cartridges in the magazine. I am used to a pump-action shotgun, and can pump this rifle. Using a high line of sights, higher than placed on this rifle by the factory, the sights line up the instant the rifle stock strikes my cheek. Shots are fired in running shooting in exactly the space of time that it takes me to cover a quail. That .35-caliber bullet is going to cut through, and I am willing to saddle myself with all misses. The velocity is 2,250 feet; the bullet energy about that many foot-pounds; the trajectory so flat up to 150 yards that we need not concern our-

Why "Possibles" Go Wrong

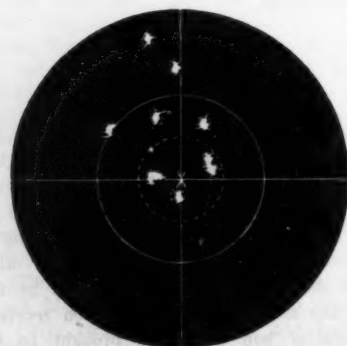
By AL BLANCO



No. 1

IT HAS been my privilege from time to time to see and analyze competition targets after the shooting is over and the shooters have gone home. I like to look at these targets and study them quietly, because they tell a story all their own. I often think of the mixed feelings these targets must have caused the shooters at the time—the heartaches, the joys, the thrills, the disappointments—yet I can not but feel that much of the disappointment was due to dumbness on the part of the shooters themselves.

Of what earthly use is it to give a shooter the finest kind of ammunition, the most accurate rifle, the best possible telescope sight, and the most perfect adjustments, and then have the shooter himself fail? The truth of the matter, if you must know it, is that the shooter is less perfect than the three elements mentioned. I mean that he has not kept pace with the improvements in his equipment—the tools with which he works. Moreover, he does not give his equipment credit for its potential possibilities. How he does squawk when a shot drops out of the 10-ring at 6 o'clock for a 9; and he calls it a weak cartridge! When he gets an 8, you can hear him clear over at Manassquan, if he is at Sea Girt, and at Port Clinton, if he is at Camp Perry. All because he neglects to utilize his experience and training. And here perhaps I should say that I am speaking of experienced shooters, not new men.

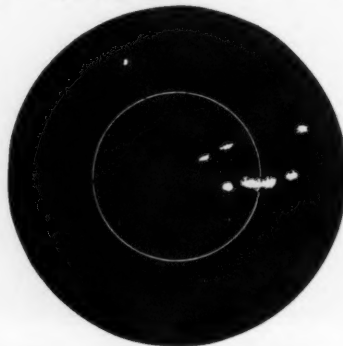


No. 2

It is generally known that each year there assembles at Sea Girt the greatest aggregation of expert small-bore shooters the country ever sees concentrated at one place and at one time, not even barring Camp Perry. These men are really specialists in shooting, and most of them shoot the .22 rifle and nothing else; but a fair percentage do shoot the larger calibers, and some even the shotgun.

I have before me, as I write, quite a few targets which I selected recently while spending the week-end at Sea Girt and going over the 100-yard targets made in the matches the week before. I was really after information: I wished to find out how many "possibles," or perfect scores, had been recorded at 100 yards during the shoot; and I found exactly 101, which is the largest number of possibles ever made during a Sea Girt shoot.

I was amazed at the number of possibles made with the shooter utilizing only half or three-quarters of the center ring. I mean that his group would sometimes be in the



No. 5

lower half of the ring, and then again in the upper half, or on the left or right of the center. There were a few cases where this was an advantage, because in some groups one shot had strayed out from the main group, and if the group had been centered this shot would have counted 9. On a great many of these possibles I think the shooter either had a horseshoe around his neck, or a rabbit's foot in his left hind pocket, because he got his possible by the thinnest kind of a squeak.

However, my thoughts are mainly concerned with reasons why possibles go wrong. In order to make myself clear it is necessary to reproduce some of the targets, which I have selected for the purpose.

The first four targets were made by one of the competitors at Sea Girt. I will keep his identity a secret, but the shooter himself will recognize his targets when he sees them. I know this shooter tried hard to get in the money in the Re-Entry Matches at 100 yards. These targets scored 99, 98, 96, and 94. With a click of right wind the 99 would have been 100; with a click less ele-



No. 3

vation his 98 would have become 100; with another click to right wind his 96 would have become 100; and with a click less elevation his 94 would have been 99, a saving of at least 12 points in the score, and three possibles out of four instead of none at all. I might add that the man who did this shooting is not a well-known shot, but judging by the way he holds he has had considerable experience.

Now, let's analyze the first target. Drawing a horizontal line through the center we find one shot below the center, while a line vertically through the center gives 2 shots by themselves on the entire right half of the center ring. Looking still further, we find 8 shots occupying the left upper quarter of the 10-ring.

Analyzing the second target, and drawing a horizontal line through the center, we find 1 shot below the center of the 10-ring. A vertical line shows 3 shots occupying the right half of the 10-ring, leaving 6 shots in the upper left center of the bull's-eye.

Drawing a vertical line through the third target we find no shots at all on the right side of the bull. The horizontal line shows an even division of shots.

All of these targets tell us that the shooter uses one-half of the bull's-eye only.

On the fourth target we find 2 shots below the center; and the vertical line does not tell us much. The principal trouble here is, of course, elevation.



No. 4

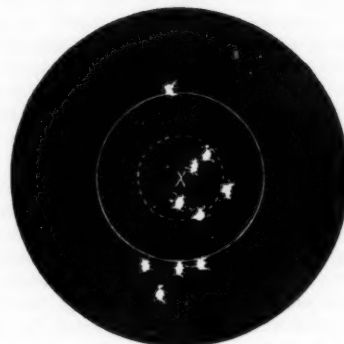
Now look at Target No. 5, made by a well-known shooter who ought to know better; and truth compels me to say that he lives in Bridgeport. This target is so obvious that it needs no comment. All the shooter got for this was a 96, instead of 100. It cost him a quarter, and I bet he got a violent headache out of it. If he didn't he ought to have!

Now take a look at No. 6. I have nothing but sympathy for this fellow, who happens to be a very good friend of mine, by the way, and who also lives in Bridgeport. (I did not know this when I selected the targets; it happens to be a pure coincidence.) This chap was simply timid about moving the sights, and I hope he will look at this target and realize that he is handicapping himself by using only one-half of the 10-ring. Not a single shot is on the right of the bull, and only 2 are below the center, 8 shots being up in the left center of the bull's-eye, as in the case of the No. 1 target.

No. 7 target was made by another ex-



No. 6



No. 7

perienced shot. He gets a 98 because he, also, had a rabbit's foot, whereas he might have had a clean 99 by raising his elevation.

No. 8 is a man who has won many matches. He is a good holder, and a hard man to beat at any time. He used two-thirds of the bull's-eye, and a little more elevation would have given him a clean 100.

No. 9 had 2 shots on the left of the bull's-eye, and got a 97 because he was probably afraid to move. These shots count just as much on the left side of the bull's-eye as they do on the right side; so why not take a chance on putting them in the center? And 97 gets you nothing.

No. 10 has 1 shot above the center, but he might just as well have had a possible.

I could probably dig up thirty or forty more incidents without any trouble, where the shooter was not equal to his gun or his ammunition. It is my firm conviction that 75 per cent of our expert small-bore men do not get 75 per cent of what their guns and ammunition are capable of doing. I have seen 10- and 50-shot groups at 100 yards from machine rest at the factory running less than 2 inches, almost continuously. I have seen any number of 10-shot groups that you could cover with a quarter; in fact, they are quite common. And I can remember, only a few short years ago, when such groups would be cause for great jubilation on the part of the men running the rest.

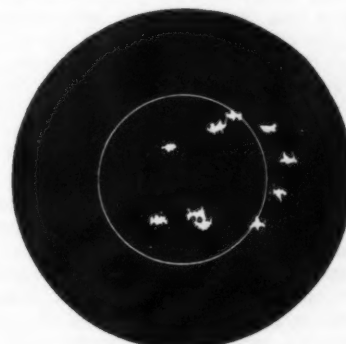
Let it be known here also that the boys in the factories are on their toes to turn out the best possible ammunition, because they know what the shooter must have.

My advice to the shooter who would improve his scores would be to watch that cen-

ter of impact, and keep the mental picture of your group consistently before you. Don't be afraid to move the sights if your shots are dangerously close to the edge of the ring. Remember that present-day guns and ammunition are capable of turning out 1-inch and 1½-inch groups; and you may be holding better than you know.

Ten shots in the V-ring at 100 yards is no longer considered a freak group: it is possible; and the time seems to be coming when the V-ring will become the 10-ring, and the 10-ring will become the 9-ring.

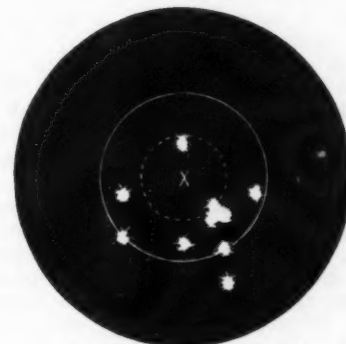
In conclusion let me add this: quit worrying about the length of your barrel, the weight of the gun, the firing pin, the trigger pull, type of fore end, style of butt plate, etc.—oh, yes; and please stop kissing the bullet! It's unsanitary, and besides does not help you or your group. Concentrate on that center of impact, and you may come nearer to finding the pot of gold at the end of the rifleman's rainbow.



No. 9



No. 8



No. 10

Editor AMERICAN RIFLEMAN,

Dear Sir:

THE Ordnance Office has been furnished the average elevations in minutes, and the corresponding military sight readings in

yards, found necessary by riflemen trying for places on the Marine Corps, Infantry, Cavalry, and Engineer Rifle Teams; and the results are tabulated below:

It is believed that this information will

be of considerable interest to those readers of THE AMERICAN RIFLEMAN who contemplate attending this year's National Matches. For the Chief of Ordnance.

Very truly yours,

R. C. COUPLAND,
Capt., Ord. Dept., Assistant.

Editor's Note: This reached us a bit late, but it is published in the hope that it may be of some use.

Range in yards	Marine		Infantry		Cavalry		Engineers	
	Elev. in min.	Mil. sight, yards	Elev. in min.	Mil. sight, yards	Elev. in min.	Mil. sight, yards	Elev. in min.	Mil. sight, yards
200 slow	27-28	275+	27+	225	26.5	200	26-27	200+
300 rapid	28-29	275-300	29+	300	29	275	29-30	275-300
600 slow	37-38	500+	39+	525+	39	525	40	525+
1,000 slow	57-58	825+	59	825+	59	850	60	875-

The Universal Gun

Being an account of a search for a gun that would shoot them all

By V. A. LYMAN

LIVING in localities where ammunition was scarce and hard to come by, forced upon the writer the desirability of having a side arm which could use several varieties of cartridges, and of the sorts most generally obtainable.

This idea will doubtless be of little interest to target-shooters or to those fortunately located where a variety of ammunition is easily obtainable; but, place a man in a foreign country in a camp, miles from a source of supplies meagre at best, and he will quickly appreciate a weapon which will use, in addition to its regular cartridge, ammunition other than that for which it was originally designed.

For a long time the writer had carried in mind the matter of having a .38 Special revolver chambered to take, in addition to its regular ammunition, the regular .38 Smith & Wesson short cartridge commonly used in pocket revolvers, the idea being that in event of no .38 Special or .38 Long Colt cartridges being available it might still be possible to get .38 Smith & Wesson Regular cartridges, and thus still have a useful weapon.

Wanting something really good, and also expert opinion, the writer first took it upon himself to consult several sources of expert information, which he has usually found to be very reliable. This case, however, proved to be different, for all but one recommended against it, saying it would be inadvisable. The exception was the Secretary of the United States Revolver Association, who stated that he had an arm similarly chambered and had had no difficulties with it. This, by the way, checked with the writer's own opinion, conclusions being based upon a rather crude job done with a round file and emery cloth in Mexico in previous years.

As what was wanted was a weapon as light and compact as possible consistent with handling the maximum variety of cartridges, choice naturally fell on the 22-ounce Colt Police Positive Special with 4-inch barrel. One was ordered specially from the Colt factory, with hand-finished action and chambered to use, in addition to the regular .38 Special and Long Colt cartridges, the .38 Smith & Wesson short. This weapon has proven entirely satisfactory.

The prophecy that there would be split shells and difficulty in extraction proved incorrect. The weapon has been used with a variety of cartridges—Special, Long Colt, and Regular Smith & Wesson and of different makes. In no case has there been split shells, with the exception of some very old regular Smith & Wesson ammunition which might have split in any gun. In all cases the accuracy of the foregoing cartridges appeared to be equal to the accuracy obtained in regular guns of equal weight.

I see no real objection to properly re-chambering .38 Special guns to take also the .38 Smith & Wesson Regular if so wished, and it is a real advantage if a versatility in the matter of ammunition is desired, for it adds a popular and easily obtained cartridge to the regular fodder the gun will shoot. In case of ammunition scarcity one may be placed in a position where this is a highly desirable asset. The Smith & Wesson Regular also makes a nice subload, with less recoil, and is somewhat cheaper than the Special in cost.

In shell dimensions the .38 Smith & Wesson Regular is about .007 inch to .008 inch larger in diameter than the Special—that is, just a trifle larger than the thickness of a Gillette safety-razor blade. (Gillette blades, by the way, are just .006 inch in thickness, and are convenient for taking measurements in consequence—one blade, .006 inch, two placed together, .012 inch, etc.)

Enlarging the cylinder at the breech the slight amount and distance necessary to admit the .38 Smith & Wesson Regular cartridge has no appreciable effect on the chambering of the longer shells, for they are still centered by their forward part where the cylinder has not been enlarged. When shot, the rear part of the longer shells will swell out slightly to the slightly oversize chamber diameter, but so far none have ever split. If reloading of the long cartridges is to be done this conversion of a gun would, of course, not be recommended on account of the swelled shells.

The bullet of the .38 Smith & Wesson Regular appears to be very slightly larger than that of the Special—.001 inch to .002 inch in those I micrometered; but I noticed they passed freely through the muzzles of the cylinder bores. I also noticed that Colt had very slightly enlarged the entrance to the barrel, funneling it out with a reamer just a trifle. At any rate the shooting qualities have been all that could be desired. Colt knew their stuff. These notes for any amateur gunsmiths desiring to make similar alterations.

To be still more versatile in the matter of taking any ammunition that comes along, it would be fine if the gun were also rigged to use the .38 Colt Automatic cartridge. However, it just wouldn't do. That .38 Colt Automatic cartridge is really a handful—too much power in it—and the chances are the cylinder of the gun simply wouldn't stand it. Colt themselves advised against it, and so did the United States Revolver Association; and I agree with them.

However (and mind, this is just opinion and has not been actually tried out as has the foregoing), it would seem that any of the big-frame guns built for .45 caliber would be amply strong for the .38 Colt Au-

tomatic cartridge. Some day, time and money permitting, it is desired to try one of them properly chambered and barrel-bored to take all the following: .38 Special, .38 Long Colt, .38 Colt Automatic, and .38 Smith & Wesson Regular. The bullets are all very closely the same diameter; and given the right barrel size, it's merely a matter of proper and accurate internal cylinder dimensions. Primarily the boring of barrel and cylinder should be right and safe for the .38 Colt Automatic cartridge, as this cartridge is too powerful to be trifled with in the matter of perhaps causing its jacketed bullet to be swaged down a bit when passing through, and perhaps developing excessive pressures. Suffice to say, use the .38 Colt Automatic cartridge as a starting point, get the boring right for this, and afterward chamber for the .38 Special and the .38 Regular. This would give a gun using any and all the principal .38 revolver and pistol cartridges with the exception of the .38 Winchester, which is really a rifle cartridge, and .40 caliber at that; and the .380 Automatic, which is so small that shell and all will drop through the cylinder.

In a pinch a person up against it for ammunition and with .380's available *might* be able to use them in a .38 revolver by wrapping the shell part only tightly with paper until they fitted the cylinder, and then lacing a suitably sized string or wire through the head grooves between cartridges to hold them in place. Never tried; merely offered as a suggestion, and not recommended; but, "poor folks sometimes has to use poor ways."

This apropos to a suggestion of a friend in Latin America who mentioned that it was possible to shoot .45 Colt Automatic cartridges in a regular .45 revolver by simply wrapping the shells in paper sufficiently to bring them up to chamber size, the wrapping being tight enough to hold the cartridges in place. Not recommended, but can be done.

One sees some great expedients far from source of supplies, and developed by pressure of necessity. I once saw an automobile radiator hose extemporized by killing a calf and pulling off a section of leg skin entire without slitting it, thus leaving it as a tube; and this was used as a radiator hose. But this is another story, as is also the matter of cutting .30-30 Winchester rifle cartridges apart about 1/2 inch from the head, and using the head end with black powder as primers for reloading artillery shells, no regular primers being available. Where there's a will, and an urge of necessity, a way is usually found.

It is worth mentioning that the .32 Colt Automatic pistol will handle the common .32 Smith & Wesson revolver cartridges very nicely for two shots. Simply lock back the

(Continued on page 28)

HOW FAST CAN DUCKS FLY?

(Continued from page 19)

terval. If such a procession is timed with a stop watch, flock after flock will be found to pass between the same two points in about the same period of time. And that such would be the case might reasonably be predicated. Every mechanism of man—be it airplane, ship, loom, or what not—has an optimum rate of function at which it gives the greatest proportionate returns for the amount of energy expended. Beyond a certain point, speeding up does not give commensurate results; on the contrary, it is subject to the law of diminishing returns. It would be strange indeed if, in the age-old adaptation of species, the delicate mechanism that propels bird life through the air had not adjusted itself to most favorable speed conditions. Nature is an economist in such matters, and individuals under the stress of constantly expending an undue amount of energy to attain the same result would not be the ones to survive and perpetuate their kind.

Finally, there is the maximum air speed at which each species can fly in meeting emergency. That birds can speed up beyond their average rate of travel no one who has seen a teal extend itself to escape a pursuing hawk can deny. So, too, canvasbacks slanting down from a height certainly develop tremendous, though momentary, bursts of speed. But careful observation will show that an extraordinary flight velocity of the bird itself, so far as speed over objects on the earth is concerned, has been greatly accelerated by the down-pull of gravity. Such birds are merely using the impetus of vertical fall to gain swiftness of speed through horizontal distance. Aviators have learned to use this principle—birds have always known it.

It appears, then, that besides the speed actually developed by the bird itself, which may continue up to the time of physical exhaustion, and besides the supplementary force of a following air current, which may operate for a considerable period, there is also the accelerating energy of gravity, which can be exerted only in the case of an existing altitude above the earth, and consequently for but short periods only. Unless we critically analyze the ground speed of a bird into terms of the foregoing components, conclusions as to its own flight velocity can scarcely be anything but confusing and misleading.

But while fowls of the air have a capacity to develop an increased air speed to meet emergency, their power to do this, by energy developed within themselves, seems not great. Their normal rate of movement is so high as apparently to meet most speed requirements. If the hunter suddenly rises out of a blind and shoots at a passing duck, the speed of the frightened bird will be somewhat increased, but not extraordinarily so. It will not develop, from its own mechanism, such doubled or tripled velocity as the loping coyote shows as it suddenly flashes after a startled rabbit. Careful observation has convinced me that the maximum emergency speed and the optimum travel speed, so far as any given

variety of waterfowl is concerned, are geared quite closely. If such birds can speed up horizontally more than about a third beyond their ordinary rate of travel through the air, my estimates are in error.

It would seem that this reserve of speed of ducks might be determined by deducting the optimum speed of any variety of duck, as shown by the stop watch, from its maximum when forced to its flight limit. This maximum air speed can be measured. All that is necessary is to run down on the bird with an airplane, and check its velocity against the reading on the anemometer.

III

While the swiftness with which the bird propels itself over a fixed object on the earth's surface is important to the shooter, so also is the direction and rate at which air currents are also moving over this same fixed object. In some cases the latter agency is even more important. The air speed of the same species of bird seems to be a factor having no wide variables, while the influence of air currents, as a following table shows, may extend from practically nothing to extreme limits.

The rifleman recognizes the drifting effect of wind upon his projectile, and mechanically compensates for it by adjustment of his sights. Compared with the wild-fowler, however, the windage problem of the rifleman is relatively simple, for even in a gale his target remains stationary. But with the shotgun man the same wind would not only drift his charge of shot but hurtle his flying target past with greatly increased velocity. It is quite possible for an opposing storm to stop all ground speed of a waterfowl; or, on the other hand, to perhaps triple its velocity over the earth, as the bird is borne along not only by its own wings but by the tempest. Further, the rifleman has abundant time to reason out the extent of the compensation for windage necessary, and uses his critical faculties to that end. But the wild-fowler with the scatter-gun must make his similar adjustment for wind with the swiftness of a flash of light—and his decision must be one of intuition, based upon prior thought and experience but without present conscious attention or reasoning.

The extent to which air currents operate to affect the ground speed of flying birds is shown by a popular meteorological classification:

Air movement	Velocity miles per hour
Calm	0 to 1
Light air	2 to 3
Light breeze	4 to 10
Gentle breeze	10 to 15
Moderate breeze	15 to 20
Fresh breeze	20 to 25
Strong breeze	25 to 30
Gale	30 to 40
Storm	50 to 60
Hurricane	60 to 90

It is apparent from the foregoing table that the speed of a flying bird through the air, and its velocity between two fixed points on the earth, can never coincide except in an atmospheric calm. It is obvious also that a duck

heading or quartering into the wind will have its speed over objects on the earth proportionately slowed down by the pressure of air currents against it. Conversely, the ground speed of the same bird flying with the wind will be that due to its own propulsive efforts plus that of the movement in miles per hour of the hastening air currents behind it. The problem of duck velocity in the air is thus entirely comparable to that of the same bird swimming in a stream, in which the rate at which objects on the bank are passed depends upon whether the water is still, or the bird swims against the current, or with it.

The influence of the movement of the air mass itself on the ground speed of the bird is something that must always be evaluated at the moment by the hunter himself. The ballistics of his gun and ammunition may be told him with mathematical exactness, and the factors pertaining to the flying duck may be known within quite close limits, but the influence of air currents is always a variable, often a variable of wide limits, and is therefore the most confusing factor in his problem, especially at the longer ranges. Consider the fact that if the propulsive force of a strong breeze be added to the normal speed of such a duck as the pintail, it will raise the ground speed of the latter to as much as 90 miles an hour, while the same duck, heading against the same wind, would be slowed down to as low as 30 miles an hour as it passes over the shooter.

Though wind velocity can not be directly calculated by the wild-fowler for his shots, yet attention given to the rate of winds will be materially helpful. Such a variable as windage will always keep duck-shooting as an art and not a science. At the same time, it is equally true that the more that exact facts or even thoughtful estimates can be substituted for lack of understanding in any art, the greater will be the success of its application. As to duck-shooting, its requirements should be reasoned out; they should then be conformed to in practice by the exercise of will power; and the time will come when they will be applied on the basis of an instantaneous decision that has become second nature as a result of the formation of good shooting habits. In my opinion, the best shotgun shots in the field are those to whom throwing up the gun and pressing the trigger are the automatic response to the visual stimulus of the bird in flight—a response which, through training, has passed from control of conscious thought to that of the subconscious mind. In other words, the mental mechanism of the shotgun-shooter should function quite differently from that of the rifleman. Coming back to the special matter of windage, the experienced duck-hunter instinctively, though not consciously, takes this factor—along with all the others that are here enumerated—into his instantaneous decision as to the lead necessary.

(To be concluded)

INCREASED BULLET SPEEDS

(Continued from page 11)

which the test was concluded, amounted to barely 6 minutes of angle. The same man fired at all ranges in quick succession. The firing was done from the shoulder (sitting) and the fore end of rifle rested on a cushion.

The curve of the values of tangents (tg. a) for the 180-grain and 143.5-grain Halger bullets up to a distance of 2,000 meters, or just about 2,200 yards, as found by actual firing, with corresponding angles of elevation added, appears in Fig. 7.

An elevation of 1° gives a horizontal range of 1,520 meters, or 1,665 yards, for the 180-grain Halger .280 H. V. Magnum bullet.

For comparison's sake the angles of departure are also given in the above table for the German military 154-grain, flat-base Spitzer bullet of 7.9-mm. caliber (sectional density = 20.4 grams, cm.³) and for the new German 198-grain military long-range, stream-line Spitzer bullet of the same 7.9-

mm. (.311-inch) caliber (sectional density = 26.2-grams, cm.³). These two German service bullets are fired from standard military barrels 29¾ inches long with initial velocities of 2,862 foot-seconds and 2,533 foot-seconds respectively, according to official "Regulations for Heavy Machine Guns H. Div. 73."

For the sake of further direct comparison the elevations in minutes of angle are given below for the latest officially adopted service bullet of high ballistic efficiency—i.e., for the United States 172-grain (sectional density = 24.55 grams, cm.³), caliber .30 boat-tail Spitzer bullet fired from the U. S. A. Mark I 1927 service cartridge in a 24-inch barrel with an initial velocity of 2,700 foot-seconds:

400 yards = 364 m = 11'
500 yards = 455 m = 14'
600 yards = 547 m = 18'
700 yards = 638 m = 23'
800 yards = 730 m = 27'
900 yards = 820 m = 32'
1,000 yards = 910 m = 37'

Vertex of 1,000 yards = 910 meters trajectory = ca. 4½ meters

TABLE II.—Table of Elevations

Meters	Halger .280 H. V. Magnum 72-cm. Halger barrel			German Service Cartridge caliber 7.9 mm. 74-cm. Service barrel		
	180-grain (sect. dens. 30.5 g. cm. ³)	143.5 grain (sect. dens. 23.9 g. cm. ³)	100-grain (sect. dens. 16.5 g. cm. ³)	154-grain (sect. dens. 20.4 g. cm. ³)	198-grain (sect. dens. 26.3 g. cm. ³)	
400	8'36"			9'20"	10'	
500	11'24"			13'40"	14'20"	
600	14'36"	10'10"	12'30"	19'20"	19'20"	
750	19' 4"					
900	24'10"	20'	36' 5"	43'00"	39'55"	
1,000	28'45"	24'50"	47'42"	53'40"	48'10"	
1,200	39'39"	35'55"	1'18'10"	1'20'50"	1' 7'35"	
1,250	42'20"					
1,500	59'30"	1' 0'45"	2'29'30"	2'16'50"	1'44'50"	
1,750	1'20'28"					
1,800	1'24'40"	1'33'45"		3'35'40"	2'32'35"	
2,000	1'44'50"	1'58'45"		4'43'20"	3'10'20"	
Vertexes of 1,000 m. = 1,100 yards						
trajectories... = 2 m.						
		1¾ m.		6 m.	5 meters	

VIRGINIA SPORT DE LUXE

(Continued from page 13)

intended. The Niedner comes nearest to being an all-around rifle; but there is work beyond its sphere. However, with it I do about 95 per cent of all my shooting, and with it I have filled the pot or the skillet on many an occasion. I love to hunt and love to shoot, but I also enjoy the eats that come as a result. Nothing can beat a platter of fried squirrel or friend young ground hog. Many have never learned the art of preparing and serving them, and I suppose it is well that it is that way. If they had, I have a suspicion I would get less of them to eat in the run of the year.

With considerable time to loaf and play between seasons each summer, I find much amusement afield with my guns. The bug also has bitten my family, and the wife and little boy each have their share of artillery; and more than that, they know how to use it. Many are the days we spend afield, and many are the happy hours we have enjoyed; and to no other one factor can we give more thanks than to the ground hog. For that reason I pray that he may long be with us.

Conservation is now receiving considerable attention of our department of game and inland fisheries here in Virginia; and we, like Pennsylvania, are going to bring back our game as it should be. We have immense

mountainous areas of waste land, suitable only for parks and recreation purposes; and with the action toward establishing our National parks here, and with all other effort that is now being put forth, we are going shortly to have an abundance of game. In the meantime we have the ground hogs, and in such numbers that they are more than a pest in some localities, and more than make up for the scarcity of other game.

RIFLES FOR AFRICAN GAME

(Continued from page 16)

natives, went out to where they had heard the last shot. They found the jammed rifle, and followed up the spoor, knowing a tragedy had happened. The followers finally came on the lioness, and the white man shot her dead over her victim's body. The desperately wounded man was still alive, but luckily unconscious. He died before his bearers reached the camp.

Lastly, need I enlarge upon the need for care in the handling of loaded firearms? It is simply appalling how careless some people are, and how many accidents happen. I have seen a man pull out by the muzzle a loaded hammer shotgun from under the seat of a mule cart. The hammer caught on a projection, and it went off, shooting him. I have known a man bang down the butt of a loaded and cocked rifle on a cement floor.

The bullet, a soft-nosed one, shot him right through the body, making a frightful wound, of which he died in a few minutes. Examples are endless. As to the person who points a rifle "for fun," and then tells the coroner he "didn't know it was loaded"—well, a criminal lunatic asylum is the only place for him.

THE UNIVERSAL GUN

(Continued from page 26)

slide, drop a cartridge into the barrel, and unlock slide, letting it go forward with a snap. Put one cartridge into the magazine. The slide will not go quite as far forward as usual, owing to the cartridge rim, but almost as far, and ejection and feeding in of the second cartridge is normal.

In a pinch it will be found that .32-20 Winchester rifle cartridges can be shot in a .38 Special gun. Naturally the results are not satisfactory, but if you haven't anything else you will use what you can get, and be thankful for that. The results of a .32-20 in a .38 Special gun are, simply: No harm to the gun; every cartridge will fire; most shells will split; accuracy nil; penetration with smokeless cartridges very poor, as the looseness of bullet in barrel does not allow powder to burn with proper pressure. Just the same, they are better than nothing and will serve after a fashion for short-range defense.

In this connection it might be natural to wonder whether the latest .38 Colt Automatic gun could not be rechambered to use successfully, in addition to its regular cartridge, the .38 Special and .38 Smith & Wesson for emergency use, possibly as a single-shot. This seems doubtful, owing to the mechanical construction of the weapon; but it is worth looking into. A report from anyone successfully arranging one of the new Automatics to handle all three cartridges would be of interest.

A CORRECTION

By E. M. FARRIS

HASTE often proves one's undoing. In the June RIFLEMAN there appeared a short article that I wrote about a new scope coming out in England, which—from the cuts appearing in an English publication—I took to be a Fecker, pure and simple. I called it a Fecker in that article. Then I received one of these scopes at the very low price offered (\$29.90, including duty), and laid it beside my own scope to check up on it. It certainly was not a Fecker. It had been fashioned somewhat on the lines of that famous American article, but it is an entirely new proposition. We may still stick by our American makes and feel we are favored with the best in scope sights.





Conducted by L. Q. Bradley

We Beat The Swiss—And How!

THE AMERICAN RIFLE TEAM won the World Championship in the International Matches at Antwerp, Belgium, fired over the three-day period, August 7-9, inclusive. The United States Team total was 5,441, one point less than the present record made in 1929 by the Swiss. Switzerland finished second this year with a score of 5,407.

Cable news and Associated Press dispatches from our team at Antwerp indicate that Major Boles and his world champions will return on the *America*, leaving Cherbourg August 14 and due in New York August 23. They will bring back the Argentine Challenge Cup, which the Swiss were forced to relinquish for the first time since 1924. If possible, the trophy will be rushed to Camp Perry for exhibit there during the conduct of the National Matches.

Oksa, of Finland, became this year's individual all-around champion by scoring 1,111 points. Renshaw, the American, was second with 1,100, and Hartmann, Switzerland, third with 1,099. The record for the event is 1,114 points set by Hartmann in Stockholm in 1929.

Oksa set a new world record for the standing position by scoring 359, as against 358 made by Zimmermann, Switzerland, at Stockholm last year.

Seitzinger, of the American Team, won the championship in the kneeling position with 375. The record is 379, made by Hartmann at Rome in 1927. Leskinen, Finland, won the prone shooting title with 389, which tied the record made by Bruce, America, at Rome in 1927.

The American Team prone score of 1,910 points shattered the prone record score of 1,906 points, established by the 1924 United States Team.

A full account of the 1930 International Matches will appear in the October RIFLEMAN.

The scores of the American marksmen follow:

Name	Standing	Kneeling	Prone	Total
Renshaw	348	371	381	1,100
Seitzinger	334	375	385	1,094
Sharp	348	360	380	1,088
Swanson	331	372	383	1,086
Fisher	343	349	381	1,073
Total	1,704	1,827	1,910	5,441

CHALLENGES

We have just organized the GREENVILLE RIFLE CLUB, and realizing the need for something interesting, and to keep the boys coming out, I am going to ask if possible

to run a little notice in the next issue of the RIFLEMAN for us asking for Postal Matches, .22-caliber rifles, details to be arranged by mail. All challenges and matches will be answered and worked out.—Oran Delaney, Secy., Greenville Rifle Club, Greenville, Tex.

Believing we have the 77-year-old champion small-bore rifleman of the United States in the offhand and prone positions at 75 feet, the MCKEAN COUNTY RIFLE CLUB has fifty dollars' worth of confidence to back up their man, and hereby challenges any man of that age to a match with their grand old champion in a shoulder-to-shoulder match. Mr. Daniel H. Reilly is the local club's candidate for the honors. Mr. Reilly longs for another contest before the time comes when failing sight must put finis to nearly 70 years of rifle-shooting.—Robert E. Smith, Secy., McKean County Rifle Club, Bradford, Pa.

TEXAS RIFLE ASSOCIATION MATCHES

By THURMAN RANDLE

THE Texas State Rifle Association Matches were held on the Camp Mobry range at Austin, June 8 to 15. The first two days were given over to the pistol matches, while the big-bore and small-bore rifle matches took all the time of the other six days.

This was the tenth annual shoot of this association, and by far the largest in matter of attendance and prizes awarded. One hundred and one shooters entered. The record attendance before this year was 76. This year's record attendance was due to the co-operation of the National Rifle Association, the addition of the small-bore matches, and the increased publicity given to the shooters over the State. The programs were sent out to the shooters over two months before the time of the shoot, thus giving the shooting enthusiasts plenty of time to figure out just how to get away from the old job for a full week.

The matches were run off with a machine-like smoothness. Jesse Raven, of Austin, who has been executive officer for the past five years, can take a crew of local boys for pit service and make things click in true Camp Perry style. The entries, squadding, and scoring were ably handled by C. F. McCubbin, of the Peters Cartridge Co. Handling the entries was made easy, however, by

(Continued on page 30)

HONOR ROLL—100 PER CENT N. R. A. CLUBS

(All club members are individual members of the N. R. A.)

SANTA PAULA RIFLE CLUB

Mr. E. D. Stuart, Secy.
1245 Main Street
Santa Paula, Calif.

HOOSIER RIFLE CLUB

Mr. Jno. S. Michaelson, Secy.
227 E. Ohio Street
Indianapolis, Ind.

OILFIELD RIFLE CLUB

Mr. Earl Montgomery, Secy.
Ferdig, Mont.

GARY RAILWAYS RIFLE CLUB

Mr. H. J. Buchholz, Secy.
116 W. 45th Avenue
Gary, Ind.

SAN FRANCISCO TRAFFIC RIFLE AND REVOLVER CLUBS

Mr. George Mildahn, Secy.
923 Central Avenue
San Francisco, Calif.

MONTICELLO RIFLE CLUB

Mr. Henry D. Block, Secy.
130 Monticello Avenue
Jersey City, N. J.

RIFLE CLUB OF SUPERIOR

Mr. M. J. Arbuckle, Secy.
Superior, Wyo.

SWISS RIFLE CLUB

Mr. Isidor Ochsner, Secy.
General Delivery
Sumner, Wash.

WOODLAND RIFLE CLUB

Mr. J. S. Tallman, Secy.
Pleasantville, N. Y.

GREENVILLE RIFLE CLUB

Mr. Otelo Ottman, Secy.-Treas.
Greenville, Ohio

PECKVILLE RIFLE ASSOCIATION

Mr. John E. Bridges, Secy.
Rear 341 Maple Street
Peckville, Pa.

ASTORIA RIFLE CLUB

Mr. Wm. A. Bruno, Secy.
35-13 Walcott Avenue
Astoria, L. I., N. Y.

CITIZENS RIFLE CLUB

Mr. Frank F. Arnold, Secy.
Forest City, Iowa

GENEVA RIFLE AND PISTOL CLUB

Mr. Donald L. Greene, Secy.
29 Lyceum Street
Geneva, N. Y.

NORWICH RIFLE CLUB

Mr. Jesse Wightman, Secy.
5 Hickory Street
Norwich, N. Y.

HARPER COUNTY RIFLE CLUB

Mr. H. C. Barrett, Secy.
Anthony, Kans.

A. C. SPARK PLUG RIFLE CLUB

Mr. J. A. Prophet, Secy.
2427 Rascob Street
Flint, Mich.

HONOR ROLL—100 PER CENT N. R. A. CLUBS—(Cont.)

WAYNE RIFLE AND PISTOL CLUB
Mr. Ward L. Garner, Secy.
143 W. Main Street
Wayne, Mich.

SPEARVILLE RIFLE CLUB
Mr. Ernest L. Ogle, Pres.
Spearville, Kans.

GRAND MERE RIFLE CLUB
Mr. Ray H. Mongreig, Secy.
Stevensville, Mich.

TEXAS RIFLE ASSOCIATION MATCHES (Continued from page 29)

the system instituted by the secretary, John Grist, Jr., of Austin. He gave every entrant an envelope that contained a program, entry blanks, N. R. A. membership blank, a copy of the latest RIFLEMAN, and even a full-size new pencil. At that, some wag complained that his envelope was not complete because there had not been included a pocketknife with which to sharpen his pencil.

The pistol matches were held under none too good conditions, the wind being rather strong both days. Scores were none too high, but competition was keen just the same. After the first two matches were fired, it was evident that the State championship was to be a contest between L. L. Cline and A. B. Fest, both of San Antonio. Fest won out in the end by three points; but these two gentlemen were far ahead of the field. For the first time Standard American targets were used in all the matches, thus making it impossible to compare scores made in past years.

The rifle matches got under way the third day amidst showers and sunshine. Every day it rained some, but not enough to hold up shooting for long. Despite the rain and wind, several record scores were made for this meet. In fact, nearly all matches had higher scores than ever before, due a lot to the accuracy of the 1929 National Match ammunition used so freely. Sergeant Slatton, of the 9th Infantry, made a clean score of 50 with the service rifle at 1,000 yards, in a foggy shower, to break the record in the Barker Trophy Match over the tricky long range at Camp Mobry. In all, record scores were made in six of the thirteen single-entry matches.

The introduction of the small-bore game this year brought forth many of the dyed-in-the-wool small-bore bugs from over the State. Thirty-four of them, with all the accessories and trinkets that only a small-bore shooter can collect, lined up and battled it out for the five trophies up for the first time. Good scores were made in all the matches. From the interest shown in the small-bore matches, it is evident that this game will take its place in the Texas shoot right along with the big-bore and pistol.

The races for the three State championships were closely contested and were never decided until the last matches were finished. John Callan, of Austin, was the winner in

the big-bore match, Thurman Randle, of Fort Worth, in the small-bore, and A. B. Fest, of San Antonio, in the pistol.

Summaries are omitted due to lack of space.

INTERNATIONAL TEAM CONTRI- BUTIONS

1. Charles C. Foster, York Harbor, Me.	\$15.00
2. James F. Gable, Southbridge, Mass.	10.00
3. A. J. Huebner, Pittsburgh, Pa.	10.00
4. Stuart Scott, New York, N. Y.	10.00
5. Charles C. Berkeley, Newport News, Va.	10.00
6. J. B. Beniamino, Los Angeles, Calif.	5.00
7. Albert Hartley, Bristol, R. I.	5.00
8. Col. C. E. Stodter, Buffalo, N. Y.	5.00
9. R. W. Alderman, Washington, D. C.	5.00
10. J. Vincil Stone, Seattle, Wash.	5.00
11. Per Ramee, Indianapolis, Ind.	5.00
12. Dan Sramek, Chicago, Ill.	5.00
13. G. W. Wulff, Cleveland, Ohio	5.00
14. Stuart B. Miller, Marquette, Mich.	5.00
15. I. Y. Johnson, Los Angeles, Calif.	5.00
16. Bakersfield Rifle Club, Bakersfield, Calif.	5.00
17. P. R. H. Washburn, Sodus Point, N. Y.	5.00
18. Thomas H. Smith, Denver, Colo.	5.00
19. Adam W. Schwoebel, Grangeville, Idaho.	3.00
20. John Irwin,	2.00
21. Oswald D. Lewis, East Windsor Hill, Conn.	2.00
22. John P. Sellman, Jr., Edwardsport, Ind.	2.00
23. H. M. Mogge, Huntington, W. Va.	2.00
24. M. O. Dodge, Thorp, Wash.	2.00
25. Fred Hollerbach, Chicago, Ill.	2.00
26. E. D. Seymour, New York, N. Y.	2.00
27. A. C. Adams, Royal Oak, Mich.	2.00
28. E. S. La Bar, Hawley, Pa.	2.00
29. Carl T. Foik, Hamberg, N. Y.	1.00
30. Howard L. Shaw, East Stroudsburg, Pa.	1.00
31. L. J. Skocpol, Crete, Nebr.	1.00
32. John Jonker, Holland City, Mich.	1.00
33. Patrick C. Bradley, Pittsburgh, Pa.	1.00
34. G. E. Hoffman, Lansing, Ill.	1.00
35. Joe Robins, Bozeman, Mont.	1.00
36. Soren Hansen, Racine, Wis.	1.00
37. C. Gilson Burch, Lynbrook, N. Y.	1.00
38. J. E. Robinson, Goose Creek, Tex.	1.00
39. Frank C. Evans, Lawrence, Mich.	1.00
40. Arthur Dennison, Fontana, Calif.	1.00
41. J. H. Basham, Rockwall, Tex.	1.00
42. W. L. Montgomery, Avinger, Tex.	1.00
43. Henry S. Elkin, Concord, N. H.	1.00
44. W. J. Harris, Ironwood, Mich.	1.00
45. Lester Dunn, Kansas City, Mo.	1.00
46. W. A. Anderson, Leneve, Oreg.	1.00
47. Edward L. Eich, Rochester, N. Y.	1.00
48. Gordon Bess, Tucson, Ariz.	1.00
49. A. K. Friedrich, Ames, Iowa	1.00
50. Lester F. Stewart, Normal, Ill.	1.00
51. A. C. Wintermute, Phillipsburg, N. J.	1.00
52. Jack Schuk, Chicago, Ill.	1.00
53. Ben Ornato, Groveton, Pa.	1.00
54. Hugh Parker, Aurora, Ill.	1.00
55. G. H. Mickey, Cleveland, Ohio	1.00
56. Frank J. Blackburn, Scotia, Calif.	1.00
57. G. L. Roach, Round Lake, N. Y.	1.00
Total	\$170.00

WASHINGTON STATE RIFLE ASSO- CIATION MATCHES

FOLLOWING are the results of the Washington State Rifle Association's annual competition, Camp Bonneville, Wash., May 29-31, and June 1, 1930:

LIST OF MATCHES AND THE WINNERS

Match No. 1—Individual Civilian Match.
Won by H. P. O'Rielly, Seattle Rifle Club.

Match No. 2—Individual Military Match.
Won by Pvt. J. L. Brice, Oregon National Guard.

Match No. 3—Maj. William Kelley Match.
Won by Pvt. J. L. Brice, Oregon National Guard.

Match No. 4—Good White Eagle Match.
Won by 1st Lieut. L. V. Stoddard, Washington National Guard.

Match No. 5—Fort Nisqually Match. Won
by H. P. O'Rielly, Seattle Rifle Club.

Match No. 6—Individual Championship.
Won by Corpl. Jesse Newman, Vancouver Rifle Club.

Match No. 7—Team Match (open cham-
pionship). Won by Washington National
Guard.

Match No. 8—Interclub Team Match.
Won by Seattle Revolver Club.

Match No. 9—Grand Aggregate. Won by
Corpl. Jesse Newman, 7th Infantry.

RIFLEMAN TROPHY MATCH STANDING

1. Mare Island Rifle Club, Mare Island, Calif.	345
2. Centennial Junior Rifle Club, Chicago, Ill.	202
3. Dayton Power and Light Co. Rifle Club, Dayton, Ohio	191
4. Camp Fire Rifle Club, New York, N. Y.	170
5. Shawano Rifle Club, Shawano, Wis.	168
6. Victory Rifle Club, Butler, Pa.	148½
7. Hoosier Rifle Club, Indianapolis, Ind.	123
8. Sioux Valley Rifle Club, Akron, Iowa	116
9. Gary Railways Rifle Club, Gary, Ind.	106½
10. Oilfield Rifle Club, Kevin, Mont.	101
11. Montpelier Rifle and Revolver Club, Montpelier, Idaho	99
12. Tacoma National Rifle and Revolver Club, Tacoma, Wash.	97
13. South Bend Tribune Rifle Club, Inc., South Bend, Ind.	86
14. Lake Region Rifle Club, Devils Lake, N. Dak.	81
15. Burbank Rifle and Revolver Club, Burbank, Calif.	65½

TOTH FORFEITS 50-YARD OFFHAND MATCH

BECAUSE he was unable to furnish the required affidavit in substantiation of his abnormally high score of 381 x 400 in the 50-Yard Small-Bore Offhand Match, David Toth, Benham, Ky., has been technically disqualified and the match is forfeited to A. K. Friedrich, Ames, Iowa. Mr. Friedrich scored 352, 2 points better than the total of Dr. William Schulz, Cleveland, Ohio.

While correspondence with Mr. Toth failed to uncover any misinterpretation of conditions or breach of firing regulations, the Kentuckian frankly explained that there is no notary within his home town, and expressed unwillingness to go to the time and expense of obtaining the affidavit by journeying to a larger city. Mr. Toth added that he hoped to attend some big shoulder-to-shoulder shoot some time and "show you how the Kentuckian is handling a rifle and a 6-gun."

Official Bulletin of the Offhand 50-Yard event follows:

NO. 7—50-YARD OFFHAND MATCH—JUNE 10 (14 Entries)

Conditions.—Open to all. Forty shots offhand at 50 yards, any sights. To the winner, a sterling silver medal; second to fifth, bronze medals.

Name and address	Score
1. A. K. Friedrich, Ames, Iowa	352
2. Dr. Wm. Schulz, Cleveland, Ohio	350
3. Edward H. Price, Pittsburgh, Pa.	347
4. Stuart C. Edmonds, Penn Yan, N. Y.	347
5. H. G. Keene, West Medford, Mass.	334
6. George F. Martin, Evansville, Ind.	327
7. Melvin M. Heins, Los Angeles, Calif.	162
8. C. E. Hein, Redmond, Oreg.	162

DISQUALIFIED—UNABLE TO FURNISH AFFIDAVIT

9. David Toth, Benham, Ky.

DID NOT SHOOT—TARGETS RETURNED

10. C. A. Kyle, Syracuse, N. Y.

NOT REPORTED

11. Lloyd Bender, Gallon, Ohio
12. Edwin J. Lovak, Chicago, Ill.
13. C. A. Dority, Toledo, Ohio
14. Morton Solomon, White Plains, N. Y.

ILLINOIS GUARD TEAM COPS BLISS
TROPHY MATCH

By K. W. SELANDER, Secy. I. S. R. A.

THE Illinois National Guard won the Col. E. R. Bliss trophy in the Illinois State Rifle Association's Annual United Service Match at Camp Logan, Ill., Sunday, July 6, in one of the closest matches in the history of the trophy. The Army team from Fort-Sheridan landed in second place, 4 points behind the winners, while the civilian team finished in third place, 28 points behind the leaders. The course of fire was the A qualification course with teams of ten firers. The winning team averaged 319.2 out of a possible 350 for the course.

The match was fired at Camp Logan this year at the invitation of the Illinois National Guard, most of the teams arriving at the range Saturday in time to get in some practice firing Saturday afternoon. Teams were quartered in the National Guard Barracks, and everybody was on hand bright and early Sunday morning. Wisconsin Legionaries, who were invited to participate, though ineligible to receive the Bliss trophy, arrived by automobile from Kenosha, Wis., a few miles north just across the State line, and the Fort Sheridan team was transported by truck from the post about 15 miles south along Lake Michigan.

The rifle range at Camp Logan is somewhat similar in arrangement to Camp Perry, Ohio, except that Lake Michigan serves as

a bullet-catcher instead of Lake Erie and the direction of fire is almost due east. Ideal weather prevailed throughout the day and even the lusty winds which are wont to blow across the open stretches were absent.

The Army led at the end of the 200-yard standing stage by 4 points, with the civilians second. However, at the rapid-fire stages (200 and 300 yards) the civilian team fell behind and, although they were gaining at the 500- and 600-yard stages, they could not overcome the lead of the soldier teams. The civilian team had held the Bliss trophy for the past two years and went down fighting in an effort to make it three in a row. Between the Army and the Guard teams the battle waxed royal, and the match was not won until the last man had fired his final shot. The 600-yard stage was fired as the sun was getting low, and the light conditions resulting brought woe to the competitors in the last two orders.

The American Legion teams, entered in the match for the first time, turned in excellent scores, considering the short time these shooters have had to organize their teams. These are outfits which will have to be reckoned with in future contests.

The Marine team from the Great Lakes Naval Training Station was recruited from the Aviation Unit, which is normally not armed with the rifle. They made an excellent score and showed their good sportsmanship by coming into the match in spite of the handicap of limited preparation.

follows: Gibson, gold medal; Caswell, silver medal; Dawson, Mero, and Shilling, bronze medals.

Throughout the matches the WRHM radio station broadcasted the progress of the shooters; so for the first time in the history of the State the small-bore results were sent over the air. It is hoped that this practice will be followed by other rifle leagues with the view of further interesting the public in the coveted sport.

In view of the real success of the first matches fired in conjunction with the Fourth of July celebration the Izaak Walton League expects to make the Championship Rifle Matches a feature of their annual event.

SANTA CLARA RIFLE CLUB IS GIVEN
SHIELD AT BANQUET

WITH officials of State and National rifle organizations in attendance a trophy shield was presented to the Santa Clara Valley Rifle Club at a banquet given at the Hotel Sainte Claire by the Peninsula Rifle Club League.

The presentation was made by James F. McCue, State secretary of the National Rifle Association, who was also the principal speaker.

Other prominent guests were: E. H. Henderson, president of the California State Rifle Association; L. A. Pope, association secretary; John Perozai, executive officer; William Lewis, chief armorer, United States Arsenal at Benicia, and Henry Ronkendorf, president of Roberts Island Rifle Club.

Members of Peninsula League teams, which include Monterey, Palo Alto, Mountain View, Sunnyvale, and San Francisco rifle stars, were also in attendance.

Individual gold and silver medals won by rifle stars were presented in the following order:

Grand aggregate: first place, gold medal, Lloyd Mehegan, Golden Gate Rifle Club, San Francisco; second, silver medal, Paul Johnston, Santa Cruz Rifle Club. Offhand: first place, gold medal, Frank Laine, Santa Clara Valley Rifle Club; second, silver medal, H. L. Chilcote, Palo Alto Rifle Club. 600-yard slow fire: first place, gold medal, A. R. Bodenschatz, Santa Clara Valley Rifle Club; second, silver medal, Earl Harris, Santa Cruz Rifle Club.

MANCHESTER RIFLE CLUB WINS
TITLE

THE rifle team of the Manchester Rifle and Pistol Club made almost a clean sweep of the honors at the championship small-bore matches recently held. About 40 shooters from all parts of the State competed, including three teams from Henniker, Concord, and Manchester.

Teams were of ten men each, five high scores to count in the competition. All shooting was done at 200 yards, international decimal targets, 10 shots prone and 10 off-hand per man.

Manchester won the championship with a team total of 722, with Concord a very close second; score 717. Henniker was third with

	200 S	200 R	300 S	300 R	500 S	500 R	600 S	Total
National Guard	424	492	421	486	470	432	467	3,192
Army	433	487	427	474	467	443	455	3,188
Civilian	429	467	430	461	473	442	462	3,164
Wisconsin Amer. Legion	414	464	425	445	446	397	436	3,027
Marine	411	467	389	434	422	340	410	2,873
Illinois Amer. Legion	388	430	372	402	416	400	431	2,849

ANOKA WALTON LEAGUE CELEBRATION
AND RIFLE MATCHES

AT THE invitation of the local chapter of the Izaak Walton League, the Anoka (Minn.) Rifle and Revolver Club was asked to send out invitations to the small-bore shooters of Minnesota to participate in team and individual matches which were to be held in conjunction with the League's Annual Fourth of July celebration.

As a result of the invitations shooters reported at the date and time to the new small-bore range which the Anoka Club had just barely completed. The range is located at the county fairgrounds and borders the famous Rum River which, while a river of beauty, contains nothing but fresh water and an occasional 35-pound muskie. The range is fully equipped with ten modern sliding targets which operate from the pits, a telephone system which really works, and a good level stretch of nicely sodded ground which permits excellent .22-caliber rifle- and pistol-shooting up to and including 100 yards. The land was turned over to the Anoka Club by the County Commissioners and the Fair Board which insures a permanent range; a credit to any community.

During the morning the range was open to

the public for the first time, and in spite of the many attractions, such as trap-shooting, bait-casting, swimming contests, dancing, races, artillery firing, band music, and other events too numerous to mention a goodly number of people fired a string or more of shots over the course. Considerable interest was aroused which will be of material help in the future.

At 2 p. m. the team and individual matches began, which consisted of 20 shots for record on both the 50- and 100-yard ranges. All firing was done from the prone position. The final event of the day settled down to a hotly contested match between the St. Paul Rifle Team and Anoka Rifle Team, which resulted in a score of 1,895 to 1,837 in favor of the St. Paul Team. The team scores were as follows:

ST. PAUL		ANOKA	
Gibson	389	Caswell	384
Dawson	382	Mero	379
Shilling	377	Van Alstine	360
Sedro	374	Sundin	360
Lee	373	Hicks	354
Total	1,895	Total	1,837

The Izaak Walton League Championship Trophy Cup was therefore awarded to the St. Paul Rifle Team and for the Individual Championship Matches the winners were as

a team score of 676. Members of the winning team were awarded medals by the National Rifle Association.

The Individual Small-Bore Championship of the State was won by A. G. Stevens, of the Manchester club, with a score of 178. D. W. Anderson, also of the Queen City, was runner-up with 172 points. A gold medal, suitably inscribed, was awarded Mr. Stevens, and Mr. Anderson received a silver one. The bronze medal awarded the third-place winner went to Mr. Hollis, of Henniker.

The shoot was very well conducted, and shooting conditions were ideal. It is hoped to expand the matches considerably next year, to include ten or more teams, and if that is done, the Massabesic range is being considered as a more desirable range to accommodate the larger number of riflemen.

OFFICIAL BULLETINS—N. R. A. MATCHES

NO. 15—AMERICAN INDIVIDUAL DEWAR MATCH—JULY 21 (114 Entries)

Conditions.—Dewar International Team course and conditions. To the winner, a gold medal; second, a silver medal; third to tenth, bronze medals; three tyro medals.

Name and address	Score
1. Thurman Randle, Fort Worth, Tex.	398
2. O. E. Crockett, Logansport, Ind.	398
3. V. F. Hamer, Primghar, Iowa	397
4. R. E. Loudon, Butler, Pa.	396
5. A. Q. Johnson, Long Beach, Calif.	396
6. Chief H. E. Keotah, Oklahoma City, Okla.	396
7. G. A. Lindgren, Lyons, Ill.	395
8. Mrs. G. L. Kittredge, North Adams, Mass.	394
9. J. E. Donat, Berlin, Conn.	394
10. Harry E. Brill, Tulsa, Okla.	394
11. H. N. Smith, Oak Park, Ill.	394
12. Russell Wilke, Chicago, Ill.	394
13. Carl A. DuNah, Pasadena, Calif.	394
14. Albert Hartley, Bristol, R. I.	393
15. M. L. Israelson, Corry, Pa.	393
16. S. F. Benfer, Toledo, Ohio	393
17. Fred Johansen, Joliet, Ill.	393
18. J. W. Aitken, Overly, N. Dak.	393
19. W. A. L. Dallas, Hamden, Conn.	393
20. H. F. Johannsen, Chicago, Ill.	393
21. Lieut. J. F. Woolshlager, Castorland, N. Y.	393
22. H. H. Chedester, Hunderd, W. Va.	393
23. C. A. Dority, Toledo, Ohio	393
24. Rechter Olsen, LaGrange, Ill.	393
25. John Anderson, Primghar, Iowa	393
26. E. C. Korten, Sea Cliff, N. Y.	392
27. E. G. Pilzecker, Toledo, Ohio	392
28. Bob Jordan, Culver, Ind.	392
29. Morton Solomon, White Plains, N. Y.	392
30. P. F. Kittredge, North Adams, Mass.	392
31. A. J. Dornisch, St. Marys, Pa.	391
32. David R. Smith, Towanda, Pa.	391
33. J. B. Miller, Lewisburg, Pa.	391
34. L. L. McGee, Turlock, Calif.	391
35. W. S. Gibbons, Melrose, Mass.	390
36. E. G. Menefee, Rising Sun, Ind.	390
37. E. H. Wilson, Chicago, Ill.	390
38. F. B. Nail, Fort Worth, Tex.	390
39. Edwin Anderson, Des Moines, Iowa	389
40. Charles C. Harmer, Butler, Pa.	389
41. J. P. Klink, Primghar, Iowa	389
42. C. C. Moore, Jr., Huntington Park, Calif.	388
43. G. L. Mason, Cossackie, N. Y.	388
44. J. J. Ripkey, Ames, Iowa	388
45. E. D. Wallace, Berkeley, Calif.	387
46. W. L. Wilson, Stamford, Conn.	386
47. J. E. Taylor, Butler, Pa.	386
48. W. E. Trull, Mount Vernon, N. Y.	386
49. H. G. Keene, West Medford, Mass.	386
50. W. W. Grillo, Dayton, Ohio	386
51. R. O. Evans, International Falls, Minn.	386
52. Leo B. Stout, Wilkes-Barre, Pa.	385
53. William Green, Washington, D. C.	385
54. Walter C. Pope, Copperopolis, Calif.	385
55. L. C. Turner, Fort Worth, Tex.	385
56. D. B. Magruder, Stamford, Conn.	385
57. Richard S. Brown, Twelve-Mile, Ind.	384
58. A. R. Wilson, Dayton, Ohio	384
59. Ivan Whiting, Waldo, Wis.	384
60. W. E. White, Washington, D. C.	384
61. E. J. Barnes, Towanda, Pa.	383
62. C. O. Loveland, Corry, Pa.	382
63. G. P. Anderson, Oak Park, Ill.	382
64. L. J. Moore, Cascade, Md.	382
65. Giles J. Mundy, Toledo, Ohio	382
66. Daniel R. Herron, Logansport, Ind.	382
67. Robert A. Wright, Butler, Pa.	381
68. Edward Kent, Dayton, Ohio	381
69. R. W. Hawthorne, Elgin, Ill.	380
70. J. C. Bruggeman, Dayton, Ohio	380
71. C. M. Bell, Holsington, Kans.	379
72. Charles R. Dent, Charleston, W. V.	378
73. C. J. McDonald, Ayer, Mass.	377

74. R. E. Hines, Charleston, W. Va.	377
75. P. P. Richmond, Charleston, W. Va.	377
76. William H. Parker, Aurora, Ill.	377
77. Howard Flanagan, Stamford, Conn.	375
78. Arthur P. Beard, Omaha, Nebr.	374
79. W. Garrecht, Stamford, Conn.	374
80. C. L. Pfeiffer, Collingswood, N. J.	373
81. W. H. Rhodes, Berkeley, Calif.	373
82. C. K. Coble, Elizabethtown, Pa.	372
83. E. H. Hubbard, Meriden, Conn.	371
84. Thayer Mayes, South Charleston, W. Va.	370
85. Karl Krauthheim, Honolulu, Hawaii	368
86. H. P. Stamer, Toledo, Ohio	365
87. V. J. Didelot, Stamford, Conn.	357
88. B. F. Leonard, Roswell, N. Mex.	357
89. A. B. Landis, Hummelstown, Pa.	349
90. Arthur O. Hagen, Northwood, N. Dak.	313

Three did not shoot—targets returned. Twenty-one did not report.

NO. 16—200-YARD SMALL-BORE CHAMPIONSHIP MATCH—JULY 21 (61 Entries)

Conditions.—20 shots at 200 yards, decimal target, any .22 rifle, any sights. To the winner, a gold medal; to the high competitor using iron sights, a silver medal; nine bronze medals to the remaining highest nine competitors; three tyro medals; percentage medals to all scoring 190 or better.

Name and address	Score
1. Thomas Girkout, Gatun, C. Z.	197
2. A. Q. Johnson, Long Beach, Calif.	197
3. C. A. Dority, Toledo, Ohio	196
4. Lieut. J. F. Woolshlager, Castorland, N. Y.	195
5. C. C. Johnson, Urbana, Ohio	195
6. Carl A. DuNah, Pasadena, Calif.	194
7. D. D. Mercer, Upper Darby, Pa.	194
8. G. A. Lindgren, Lyons, Ill.	194
9. C. C. Moore, Jr., Huntington Park, Calif.	193
10. Thurman Randle, Fort Worth, Tex.	193
11. McLeod A. Greathouse, Fort Worth, Tex.	192
12. E. H. Davis, Seima, Calif.	192
13. Edward H. Price, Pittsburgh, Pa.	192
14. Edson Klinkel, Toledo, Ohio	191
15. H. N. Smith, Oak Park, Ill.	191
16. William Green, Washington, D. C.	191
17. L. N. MacLeod, Roslyn, N. Y.	190
18. J. E. Donat, Berlin, Conn.	190
19. E. V. Menefee, Rising Sun, Ind.	189
20. Giles J. Mundy, Toledo, Ohio	189
21. R. O. Evans, International Falls, Minn.	188
22. G. P. Moseley, Llanerch, Pa.	187
23. Fred Johansen, Joliet, Ill.	187
24. Melvin M. Heins, Los Angeles, Calif.	187
25. E. M. Kidder, Ayer, Mass.	187
26. E. A. Flanders, Liberal, Kans.	186
27. H. F. Johannsen, Chicago, Ill.	185
28. W. S. Gibbons, Melrose, Mass.	185
29. W. E. Foster, Primghar, Iowa	185
30. Harry E. Brill, Tulsa, Okla.	184
31. Walter C. Pope, Copperopolis, Calif.	184
32. Oscar Siegel, Washington, D. C.	184
33. C. J. McDonald, Ayer, Mass.	184
34. M. R. Metzloff, Devils Lake, N. Dak.	182
35. Rechter Olsen, LaGrange, Ill.	182
36. David R. Smith, Towanda, Pa.	182
37. H. C. Strand, Primghar, Iowa	182
38. Dr. W. Schulz, Cleveland, Ohio	182
39. Bob Jordan, Culver, Ind.	181
40. S. F. Benfer, Toledo, Ohio	181
41. Arthur Beard, Omaha, Nebr.	181
42. E. J. Barnes, Towanda, Pa.	180
43. W. L. Montgomery, Avinger, Tex.	180
44. Edgar E. Foster, Montgomery, Ala.	178
45. G. E. Andrews, Mason City, Iowa	177
46. W. E. Graffam, Beverly, Mass.	177
47. Albert Hartley, Bristol, R. I.	173
48. K. B. Jones, Washington, D. C.	172
49. B. F. Leonard, Roswell, N. Mex.	171
50. C. M. Bell, Holsington, Kans.	168
51. Karl J. Frisch, San Francisco, Calif.	157

Three did not shoot—targets returned. Seven did not report.

* Shoot-off authorized. Targets furnished competitors Nos. 1 and 2.

NO. 17—AMERICAN LEGION SMALL-BORE MATCH—JULY 22 (32 Entries)

Conditions.—20 shots for record at 50 yards and at 100 yards, any .22 rifle, metallic sights. To the winner, a gold medal; second, a silver medal; third to tenth, bronze medals.

Name and address	Score
1. R. E. Loudon, Butler, Pa.	399
2. A. Q. Johnson, Long Beach, Calif.	398
3. Lieut. J. F. Woolshlager, Castorland, N. Y.	395
4. Edwin Anderson, Des Moines, Iowa	392
5. G. A. Lindgren, Lyons, Ill.	392
6. E. C. Korten, Sea Cliff, N. Y.	392
7. C. O. Hullinger, Devils Lake, N. Dak.	391
8. Otto Henningsen, Philadelphia, Pa.	389
9. C. R. Ripley, Dennison, Ohio	389
10. R. O. Evans, International Falls, Minn.	389
11. Dr. R. E. Rainberger, Uhrichsville, Ohio	388
12. John Henry, Des Moines, Iowa	388
13. H. P. Clayton, Philadelphia, Pa.	387
14. J. H. Rackie, Philadelphia, Pa.	386
15. George L. Morgan, Cossackie, N. Y.	386
16. L. L. McGee, Turlock, Calif.	384
17. F. Murtagh, Roslyn, N. Y.	384
18. H. H. Anderson, Roslyn, N. Y.	382
19. David R. Smith, Towanda, Pa.	380
20. William Farris, Des Moines, Iowa	379
21. Andrew Cumps, Des Moines, Iowa	378

22. Karl Krauthheim, Honolulu, Hawaii	377
23. Kenneth W. Wright, Chanute, Kans.	376
24. Thomas D. Wilson, Des Moines, Iowa	375
25. S. V. Lawrence, Des Moines, Iowa	371
26. J. H. Freese, Des Moines, Iowa	369
27. Pearl T. Clapp, Brattleboro, Vt.	366
28. Bert M. Vander Steen, Kohler, Wis.	346

Four did not report.

NO. 18—DEWAR COURSE TWO-MAN-TEAM MATCH—JULY 22 (39 Entries)

Conditions.—Dewar International Team Match course and conditions. To the winners, sterling silver medals; second to tenth teams, bronze medals.

Name and address	Score
1. A. Q. Johnson, Long Beach, Calif.	395
2. W. K. Bowman, Hollywood, Calif.	395
3. F. H. Phelps, Burbank, Calif.	394
4. C. W. Scott, Burbank, Calif.	394
5. V. F. Hamer, Primghar, Iowa	393
6. O. R. Hamer, Primghar, Iowa	392
7. P. F. Kittredge, North Adams, Mass.	393
8. Mrs. G. L. Kittredge, North Adams, Mass.	393
9. William Green, Washington, D. C.	395
10. Oscar Siegel, Washington, D. C.	390
11. J. A. Noxon, Yonkers, N. Y.	392
12. Walter Kelsey, Tarrytown, N. Y.	392
13. L. C. Turner, Fort Worth, Tex.	392
14. McLeod A. Greathouse, Fort Worth, Tex.	391
15. R. A. Wolcott, Crockett, Calif.	394
16. W. R. Robie, Crockett, Calif.	389
17. H. F. Johannsen, Chicago, Ill.	398
18. R. Olsen, LaGrange, Ill.	383
19. O. E. Crockett, Logansport, Ind.	400
20. R. B. Hamer, Twelve Mile, Ind.	380
21. H. Webb, Clearwater, Fla.	388
22. Ruth Douglas, Clearwater, Fla.	391
23. M. A. Johnson, Pomona, Calif.	392
24. L. V. Milhoma, Pomona, Calif.	387
25. L. E. White, Plantsville, Conn.	390
26. J. E. Donat, Berlin, Conn.	387
27. William Stewart, Kansas City, Mo.	386
28. Harold Donkade, Kansas City, Mo.	389
29. J. W. Aitken, Overly, N. Dak.	381
30. R. L. Ericson, Overly, N. Dak.	393
31. H. N. Smith, Oak Park, Ill.	386
32. D. G. Wilson, Chicago, Ill.	386
33. C. J. McDonald, Ayer, Mass.	381
34. E. M. Kidder, Ayer, Mass.	390
35. C. C. Loveland, Corry, Pa.	380
36. M. L. Israelson, Corry, Pa.	390
37. Lieut. P. A. Shepherd, Buffalo, N. Y.	380
38. Capt. J. M. H. Wallace, Buffalo, N. Y.	388
39. L. F. Murtagh, Roslyn, L. I., N. Y.	385
40. H. H. Anderson, Roslyn, L. I., N. Y.	383
41. R. O. Evans, International Falls, Minn.	385
42. E. R. Franklin, International Falls, Minn.	382
43. Sergt. H. A. Smith, Buffalo, N. Y.	378
44. Capt. Kosmalaki, Devils Lake, N. Y.	379
45. R. H. Bennett, Bristol, R. I.	378
46. Albert Hartley, Bristol, R. I.	385
47. D. B. Magruder, Stamford, Conn.	381
48. W. L. Wilson, Stamford, Conn.	379
49. J. P. Klink, Primghar, Iowa	389
50. Ralph Klink, Primghar, Iowa	370
51. C. C. Hullinger, Devils Lake, N. Dak.	378
52. Jack Kosmalaki, Devils Lake, N. Y.	379
53. E. N. Stewart, Dayton, Ohio	369
54. Earl Morris, Dayton, Ohio	347
55. J. H. Daugherty, Dayton, Ohio	364
56. F. E. Hill, Dayton, Ohio	343
57. James O'Brien, Dayton, Ohio	332
58. L. A. Bryant, Dayton, Ohio	343
59. C. C. Moore, Jr., Huntington Park, Calif.	393
60. (Partner not named)	391
61. H. Stewart, New Haven, Conn.	391
62. J. H. Gussman, New Haven, Conn.	393
63. Sergt. Vernon Somers, Buffalo, N. Y.	384
64. Irving Somers, Buffalo, N. Y.	384
65. Lon Libecap, Dayton, Ohio	378
66. H. G. Gassman, Dayton, Ohio	378

One team unable to shoot—targets returned. Five did not report.

NO. 19—ANY-SIGHT TWO-MAN-TEAM MATCH—JULY 21 (24 Entries)

Conditions.—20 shots for record per man at 50 and at 100 yards, any .22 rifle, any sights. To the winners, sterling silver medals; second to tenth teams, bronze medals.

Name and address	Score
1. V. F. Hamer, Primghar, Iowa	397
2. O. R. Hamer, Primghar, Iowa	396
3. Mrs. P. E. Smith, Tulsa, Okla.	394
4. A. Q. Johnson, Long Beach, Calif.	395
5. C. C. Moore, Jr., Huntington Park, Calif.	395
6. H. F. Johannsen, Chicago, Ill.	390
7. R. Olsen, LaGrange, Ill.	391
8. J. A. Noxon, Yonkers, N. Y.	396
9. Walter Kelsey, Tarrytown, N. Y.	393
10. E. C. Korten, Sea Cliff, N. Y.	394
11. L. N. McLeod, Roslyn, N. Y.	394
12. D. E. McConnell, Gastonia, N. C.	389
13. H. M. Van Sleen, Gastonia, N. C.	398
14. W. E. Trull, Mount Vernon, N. Y.	395
15. J. J. Palme, Mount Vernon, N. Y.	390
16. H. C. Hussner, Appleton, Wis.	390
17. E. P. Grundeman, Appleton, Wis.	391
18. Dr. W. Schulz, Cleveland, Ohio	390
19. Harvey King, Cleveland, Ohio	391
20. P. F. Kittredge, North Adams, Mass.	392
21. Mrs. G. L. Kittredge, North Adams, Mass.	389
22. A. S. Bjornson, Devils Lake, N. Dak.	392
23. Mike Netzloff, Devils Lake, N. Dak.	388

13. A. R. Tripp, Leesville, Ohio	388
Harry Gartrell, Leesville, Ohio	391
14. B. W. Schlagheck, Kings Mills, Ohio	386
Everett Snider, Kings Mills, Ohio	391
15. C. J. McDonald, Ayer, Mass.	387
E. M. Kidder, Ayer, Mass.	390
16. H. H. Anderson, Roslyn, L. I., N. Y.	386
L. F. Murtaugh, Roslyn, L. I., N. Y.	390
17. R. H. Bennett, Bristol, R. I.	391
Albert Hartley, Bristol, R. I.	384
18. Edward Kent, Dayton, Ohio	391
W. W. Grillo, Dayton, Ohio	384
19. E. C. Viere, Louisville, Ky.	385
Ed Groeschel, Louisville, Ky.	390
20. L. E. White, Plantsville, Conn.	389
J. E. Donat, Berlin, Conn.	384
21. C. A. Matson, Chicago, Ill.	385
C. W. Johnson, Chicago, Ill.	383
22. E. D. Wallace, Berkeley, Calif.	391
W. H. Rhodes, Berkeley, Calif.	388
23. J. S. Stewart, New Haven, Conn.	398
H. J. Gussman, New Haven, Conn.	398

One team did not shoot—targets returned.

NO. 20—LONG-RANGE TWO-MAN-TEAM MATCH—JULY 22 (20 Entries)

Conditions.—20 shots for record per man at 200 yards, decimal target, any .22 rifle, any sights. To the winners, sterling-silver medals; second to tenth teams, bronze medals.

Name and address	Score
1. A. Q. Johnson, Long Beach, Calif.	196
W. K. Bowman, Hollywood, Calif.	195
2. J. A. Naxon, Yonkers, N. Y.	189
Walter Kelsey, Tarrytown, N. Y.	195
3. F. H. Phelps, Burbank, Calif.	192
C. W. Scott, Burbank, Calif.	187
4. L. E. White, Plantsville, Conn.	184
J. E. Donat, Berlin, Conn.	193
5. E. C. Korten, Sea Cliff, N. Y.	188
L. N. MacLeod, Roslyn, N. Y.	189
6. C. C. Moore, Jr., Huntington Park, Calif.	183
A. R. Moore, Huntington Park, Calif.	183
7. A. S. Bjornson, Devils Lake, N. Dak.	185
J. Kosmalki, Devils Lake, N. Dak.	191
8. W. M. Garlington, Chicago, Ill.	187
9. S. J. Murphy, Chicago, Ill.	187
Dr. W. Schulz, Cleveland, Ohio	185
Harvey King, Cleveland, Ohio	184
10. F. E. Smith, Tulsa, Okla.	190
Mrs. F. E. Smith, Tulsa, Okla.	184
11. W. L. Montgomery, Avinger, Tex.	186
J. H. Avinger, Avinger, Tex.	184
12. William Green, Washington, D. C.	178
Oscar Siegel, Washington, D. C.	189
13. B. W. Schlagheck, Kings Mills, Ohio	179
Everett Snider, Kings Mills, Ohio	186
14. H. O. Huesner, Appleton, Wis.	181
E. F. Grundeman, Appleton, Wis.	181
15. W. R. Wildemann, Keyser, W. Va.	184
T. O. Jackson, Keyser, W. Va.	182
16. M. D. Meiser, Elkhart, Ind.	180
R. M. Diener, Elkhart, Ind.	180
17. R. H. Davis, Selma, Calif.	178
E. A. Craven, Selma, Calif.	177
18. R. H. Bennett, Bristol, R. I.	178
Albert Hartley, Bristol, R. I.	168

NO. 21—HIGH-POWER TWO-MAN-TEAM MATCH—JULY 22 (13 Entries)

Conditions.—20 shots for record per man at 200 yards, standing, and at 600 yards, prone, any rifle, except heavy barrels, metallic sights. To the winners, sterling-silver medals; second to tenth teams, bronze medals.

Name and address	Score
1. Walter R. Walsh, Union City, N. J.	190
Edward Donaldson, Jersey City, N. J.	191
2. Vincent L. Miller, Denver, Colo.	183
W. C. Redfield, Denver, Colo.	190
3. O. T. Peterson, Jamestown, N. Y.	185
Lynn Bentley, Falconer, N. Y.	185
4. Leroy H. Anderson, Chicago, Ill.	189
C. E. Nordhus, Chicago, Ill.	182
5. H. J. Lockwood, Glendale, Calif.	188
Richard Wilson, Glendale, Calif.	180
6. Guy M. Helmeke, Stanford Univ., Calif.	182
W. H. Dole, Stanford Univ., Calif.	185
7. W. W. Michaels, Greeley, Colo.	182
Loyal Swatow, Greeley, Colo.	183
8. Roy B. Miller, Toledo, Ohio	178
A. J. Burtcher, Toledo, Ohio	186
9. Riley M. Diener, Elkhart, Ind.	175
M. D. Meiser, Elkhart, Ind.	175
10. F. E. Bryson, Jacksonville, Fla.	176
S. D. Page, Jacksonville, Fla.	170
11. M. R. Netzloff, Devils Lake, N. Dak.	178
Jack Kosmalki, Devils Lake, N. Dak.	168
12. A. S. Bjornson, Devils Lake, N. Dak.	169
C. C. Hullinger, Devils Lake, N. Dak.	169
13. Edson W. Hall, Hollister, Mo.	174
Henry Couchman, Branson, Mo.	160

NO. 22—600-YARD INDIVIDUAL MATCH—JULY 22 (40 Entries)

Conditions.—20 shots for record at 600 yards, target B, any center-fire rifle, any sights. To the winner, a gold medal; second, a sterling-silver medal; third to tenth, bronze medals; three tyro medals.

Name and address	Score
1. L. A. Pope, Los Angeles, Calif.	plus 12 bulls
2. E. V. Menefee, Rising Sun, Ind.	plus 10 bulls

3. Thomas Girkout, Gatun, C. Z.	plus 8 bulls
4. Ned Cutting, Eagle Rock, Calif.	plus 7 bulls
5. G. W. Benvie, Hatch, N. Mex.	plus 7 bulls
6. E. R. Sizer, Tacoma, Wash.	plus 7 bulls
7. C. W. Scott, Burbank, Calif.	plus 3 bulls
8. M. G. Lyutic, Richmond, Calif.	plus 3 bulls
9. J. G. Freitag, Chicago, Ill.	99
10. C. A. Dority, Toledo, Ohio	99
11. Vincent Miller, Denver, Colo.	99
12. H. C. Strand, Primghar, Iowa	98
13. E. W. Parmelee, Trona, Calif.	98
14. Edson Klinkel, Toledo, Ohio	98
15. Fred Johansen, Joliet, Ill.	97
16. F. E. Bryson, Jacksonville, Fla.	97
17. W. R. Walsh, Union City, N. J.	97
18. W. H. Debrugge, Bend, Oreg.	96
19. A. R. Bodenschatz, San Jose, Calif.	96
20. Giles J. Mundy, Toledo, Ohio	96
21. W. H. Dole, Stanford University, Calif.	95
22. M. M. Heins, Los Angeles, Calif.	95
23. B. F. Leonard, Roswell, N. Mex.	95
24. Ralph Klink, Primghar, Iowa	95
25. C. W. Monk, Anchorage, Alaska	93
26. W. W. Michaels, Greeley, Colo.	93
27. Guy M. Helmeke, Stanford Univ., Calif.	93
28. H. E. Spade, Escanaba, Mich.	92
29. C. C. Hullinger, Devils Lake, N. Dak.	90
30. Fred Fredericksen, La Pine, Oreg.	88
31. Charles W. Hall, Hollister, Mo.	87
32. Henry Couchman, Branson, Mo.	86
33. J. S. Wood, Anchorage, Alaska	80
34. H. L. Bliss, Anchorage, Alaska	78

One did not shoot—score sheets returned. Five did not report.

NO. 23—1,000-YARD INDIVIDUAL MATCH—JULY 22 (16 Entries)

Conditions.—20 shots for record at 1,000 yards, target C, any center-fire rifle, any sights. To the winner, a gold medal; second, a silver medal; third to tenth, bronze medals.

Name and address	Score
1. C. A. Dority, Toledo, Ohio	plus 9 bulls
2. Thomas Girkout, Gatun, C. Z.	plus 2 bulls
3. Edson Klinkel, Toledo, Ohio	99
4. M. B. Whaley, Seattle, Wash.	98
5. F. E. Bryson, Jacksonville, Fla.	95
6. J. G. Freitag, Chicago, Ill.	95
7. C. W. Scott, Burbank, Calif.	95
8. H. J. Lockwood, Del Monte, Calif.	94
9. J. C. Crenshaw, Greenville, Ala.	93
10. Walter R. Walsh, Union City, N. J.	90
11. Melvin M. Heins, Los Angeles, Calif.	88
12. Richard Wilson, Del Monte, Calif.	87
13. Edson W. Hall, Hollister, Mo.	86
14. Henry Couchman, Branson, Mo.	42

One did not shoot—score sheet returned. One did not report.

NO. 24—RAPID-FIRE PISTOL MATCH—JULY 23 (22 Entries)

Conditions.—8 strings of 5 shots each at 25 yards. To the winner, a sterling-silver medal; second to tenth, bronze medals.

Name and address	Score
1. Alfred W. Hemming, Detroit, Mich.	397
2. H. B. Taylor, Las Vegas, N. Mex.	387
3. R. J. Nowka, Los Angeles, Calif.	383
4. C. W. Colston, Rochester, N. Y.	380
5. Frank J. Peters, New York City, N. Y.	375
6. Karl Krauthheim, Honolulu, Hawaii	369
7. Lewis J. Raemon, Anniston, Ala.	367
8. J. B. Webb, Clearwater, Fla.	365
9. W. A. Ross, Los Angeles, Calif.	362
10. Leonard L. McGee, Turlock, Calif.	361
11. W. F. Riedell, Brooklyn, N. Y.	352
12. Theo. P. Nichols, Paterson, N. J.	350
13. R. E. Fowle, Watsonville, Calif.	346
14. C. C. Hullinger, Devils Lake, N. Dak.	345
15. Walter R. Walsh, Union City, N. J.	326
16. Harry J. Black, Des Moines, Iowa	314
17. Helen G. Anderson, Oak Park, Ill.	311
18. Howard N. Smith, Oak Park, Ill.	304

One did not shoot—score sheet returned. Three did not report.

NO. 25—N. R. A. SPRING .22-PISTOL CHAMPIONSHIP—JULY 23 (35 Entries)

Conditions.—National Pistol Match course, any .22 rim-fire pistol or revolver. To the winner, a gold medal; a silver medal to the runner-up; third to tenth, bronze medals.

Name and address	Score
1. Frank J. Peters, New York City, N. Y.	293
2. Alfred W. Hemming, Detroit, Mich.	289
3. Harvey B. Taylor, Las Vegas, N. Mex.	288
4. Harry J. Menkel, New York, N. Y.	285
5. J. Q. Dircks, Los Angeles, Calif.	282
6. J. E. Davis, Los Angeles, Calif.	277
7. O. W. Olson, Silverton, Oreg.	276
8. J. W. Aitken, Overly, N. Dak.	276
9. Karl Krauthheim, Honolulu, Hawaii	275
10. Dr. D. J. Moore, Bristol, Conn.	275
11. J. A. Bartley, Los Angeles, Calif.	274
12. Theo. P. Nichols, Paterson, N. J.	273
13. Walter R. Walsh, Union City, N. J.	272

14. Giles J. Mundy, Toledo, Ohio	265
15. A. S. Bjornson, Devils Lake, N. C.	264
16. Philip S. Beach, Rye, N. Y.	263
17. W. F. Riedell, Brooklyn, N. Y.	262
18. Eugene M. Ludlow, Penn Yan, N. Y.	261
19. W. Cook, Washington, D. C.	257
20. C. C. Hullinger, Devils Lake, N. Dak.	255
21. John Kosmalki, Devils Lake, N. Dak.	244
22. Mike R. Netzloff, Devils Lake, N. Dak.	237
23. Helen G. Anderson, Oak Park, Ill.	236
24. W. Walter Marr, Washington, D. C.	236
25. M. J. Harding, Clarion, Pa.	223
26. A. O. Hagen, Northwood, N. Dak.	218
27. Harry J. Black, Des Moines, Iowa	210

Three did not shoot—score sheets returned. Five did not report.

NO. 26—N. R. A. SPRING REVOLVER CHAMPIONSHIP—JULY 23 (21 Entries)

Conditions.—National Individual Pistol Match course, any revolver .32 or larger. To the winner, a gold medal; a silver medal to the runner-up; third to tenth, bronze medals.

Name and address	Score
1. F. A. Duffer, Watertown, S. Dak.	287
2. C. E. Ward, Los Angeles, Calif.	287
3. R. J. Nowka, Los Angeles, Calif.	285
4. J. A. Bartley, Los Angeles, Calif.	284
5. Frank J. Peters, New York, N. Y.	281
6. Harry J. Menkel, New York, N. Y.	281
7. A. W. Hemming, Detroit, Mich.	279
8. J. G. Freitag, Chicago, Ill.	277
9. J. E. Davis, Los Angeles, Calif.	272
10. W. A. Ross, Los Angeles, Calif.	270
11. J. Q. Dircks, Los Angeles, Calif.	270
12. T. Valentine, Philadelphia, Pa.	264
13. L. J. Young, Los Angeles, Calif.	260
14. Theo. P. Nichols, Paterson, N. J.	260
15. William Cook, Washington, D. C.	252
16. R. E. Fowle, Watsonville, Calif.	250
17. A. E. Seymour, Alhambra, Calif.	238

One unable to shoot—score sheet returned. Three did not report.

NO. 27—N. R. A. INDIVIDUAL SPRING PISTOL CHAMPIONSHIP—JULY 23 (20 Entries)

Conditions.—National Individual Pistol Match course and conditions. To the winner, a gold medal; a silver medal to the runner-up; third to tenth, bronze medals.

Name and address	Score
1. C. W. Colston, Rochester, N. Y.	274
2. H. B. Taylor, Las Vegas, N. Mex.	273
3. Karl Krauthheim, Honolulu, Hawaii	271
4. A. W. Hemming, Detroit, Mich.	271
5. J. G. Freitag, Chicago, Ill.	270
6. F. A. Duffer, Watertown, S. Dak.	262
7. O. W. Olson, Silverton, Oreg.	257
8. W. M. Laybourn, Steilacoom, Wash.	255
9. J. A. Bartley, Los Angeles, Calif.	251
10. Jack Bornson, Arcon, Canal Zone	236
11. Earl Ramore, Bridgeport, Conn.	216
12. A. E. Seymour, Alhambra, Calif.	181

Five did not shoot—score sheets returned. Three did not report.

NO. 28—FREE-PISTOL MATCH—JULY 23 (19 Entries)

Conditions.—60 shots at 50 meters, 50-meter international target, no time limit, any pistol, set triggers permitted. To the winner, a silver medal; second to fourth, bronze medals.

Name and address	Score
1. Thomas Girkout, Gatun, Canal Zone	511
2. Harry J. Menkel, New York, N. Y.	506
3. Lewis J. Cullen, Hollis, L. I., N. Y.	505
4. Frank Sienkiewicz, Chicago, Ill.	497
5. George F. Martin, Evansville, Ind.	492
6. William Cook, Washington, D. C.	484
7. E. J. Mannie, St. Louis, Mo.	474
8. J. W. Aitken, Overly, N. Dak.	468
9. A. S. Bjornson, Devils Lake, N. Dak.	466
10. Oscar R. Lanet, Anaconda, Mont.	459
11. W. Walter Marr, Washington, D. C.	458
12. G. F. Abbott, Anaconda, Mont.	430
13. M. D. Meiser, Elkhart, Ind.	353
14. Riley M. Diener, Elkhart, Ind.	313
15. J. H. Cataldo, Lyons Falls, N. Y.	301

Three did not report.

NO. 29—N. R. A. SPRING POLICE CHAMPIONSHIP—JULY 23 (22 Entries)

Conditions.—Camp Perry Police course and conditions. To the winner, a gold medal; a sterling-silver medal to the runner-up; third to tenth, bronze medals; and, in addition, the appropriate qualification insignia to all qualifying as Expert, Sharpshooter, and Marksman.

Name and address	Score
1. A. W. Hemming, Detroit, Mich.	292
2. C. E. Wood, Los Angeles, Calif.	288
3. R. J. Nowka, Los Angeles, Calif.	286
4. J. A. Bartley, Los Angeles, Calif.	286
5. Lee J. Young, Los Angeles, Calif.	284
6. W. A. Ross, Los Angeles, Calif.	283
7. J. E. Davis, Los Angeles, Calif.	283
8. J. G. Freitag, Chicago, Ill.	282
9. John Bout, Hartford, Conn.	279
10. J. O. Dercks, Los Angeles, Calif.	275
11. Roscoe Gray, Jackson, Mich.	271
12. J. A. Heilmann, Sr., Kansas City, Mo.	270

13. E. J. Langrish, Jr., Hartford, Conn.	267
14. R. E. Fowle, Watsonville, Calif.	264
15. M. D. Meiser, Elkhart, Ind.	263
16. Tom Rice, Hartford, Conn.	258
17. Howard N. Smith, Oak Park, Ill.	252
18. R. L. Nelson, Kansas City, Mo.	241
19. Myron E. Gurnea, San Francisco, Calif.	240
20. Emil Dutill, San Francisco, Calif.	239
21. Riley M. Diener, Elkhart, Ind.	225

One did not report.

A UNIQUE RIFLE RANGE

(Continued from page 17)

mind that will stand a boy or girl in good stead in the battle of life. Rifle practice, with its constant demand for patience, determination, and attention to detail, brings out every latent weakness in the tyro. It is Mr. Lowndes' belief that each defect of character can be cured as it appears through the discipline of supervised work on the range.

It is interesting to note that the scores which the patron of this remarkable club most loudly applauds are not always the possibles. He apparently regards those who turn in such scores as finished products upon whom no more work is necessary. But the beginner who starts with a miss and makes his tenth shot a 5 arouses his keenest interest. On the other hand, the boy or girl who shoots brilliantly at the beginning of a string and then sags off toward the end is always the subject of a conference between the host and the coach. Such shooters need attention, for they have displayed, as plainly as if it were written, habits of carelessness, lack of determination, or indifference, which must be wiped out by patient coaching and discipline carefully applied. It is the contention at Glenelg that high scores are not in themselves an index of character, for all can not be expected to make them, even with the best of will. It is the shooter who starts with erratic strings and works up to consistent scores, even if they are not so high, who shows that the training is having the desired effect. In a recent match the most highly praised marksmen of them

all was a boy who broke a clip during rapid fire. While the precious seconds passed he calmly extricated the clip and reloaded without a sign of discouragement—and got in every shot before the targets slid into the pit. The accident spoiled what might have been a high score. His final reckoning was fair, however, and not a shot went wild in spite of the rapidity with which he had to fire the last five shots "to beat the target." He showed determination in the face of adversity.

The 1930 season, which came to an end on August 10, was one of the most successful in the history of the Glenelg Club. From the beginning of the training period until the last match was fired, the dormitory was filled to capacity and the range was noisily busy every day. Capt. Robert L. Montague, aide-de-camp to the Commandant of the Marine Corps, took leave in order to coach the members. The material with which he worked ranged in age from 13 years to 21. In experience it ran from the greenest of beginners to those with expert's rating. Before the end of the season half of the members had qualified as Experts over Course D, and most of the others were Sharpshooters. All matches at Glenelg, by the way, are fired over Course D. There is only one range, 200 yards, and there are two regulation targets.

The opening match of the season was shot against a team of Marines selected from among the personnel of the Recruiting Office in Baltimore and the Marine Barracks, Annapolis. Each team consisted of eight firing members, but only the five high scores counted for aggregate. The Marines won with a score of 1,146 against the Glenelg card of 1,136, the five high being counted in each case. However, the total of the eight Glenelg shooters was higher than that of the eight Marines. This showed that the club team had acquired consistency in their shooting, and somewhat

dulled the keen edge of disappointment. The Glenelg team included Christopher Lowndes, Miss Virginia Watts, Edward Inman, Upshur Lowndes, Miss Katherine Watts, Richard Arden Lowndes, John Brydon, and Roland Voorhees.

On the following Wednesday the same team defeated a team made up of members of Company F, First Maryland Infantry, of Hyattsville. The score stood 1,181 to 1,169 at the end of an interesting day's shooting.

The final match of the season was fought out with a team from the Fifth Maryland Infantry of Baltimore. Glenelg won with a score of 1,183, against 1,164 for the Guardsmen. It was anybody's match until the rapid-fire stage, when the club crept up on the soldiers. At this stage Miss Katherine Watts scored a possible at prone rapid, and her sister, Virginia, a 49 at rapid fire, in the difficult offhand position. John Brydon and Richard Lowndes cracked out possibles at offhand slow and at both rapid-fire positions. Upshur Lowndes turned in a possible at prone slow and prone rapid, while Edward Inman and Roland Voorhees both hung up possibles at prone rapid. The Glenelg victory is all the more remarkable when one considers the fact that the range record of 243 was broken by Private Smallwood with a total of 244. He nailed two possibles at rapid fire and one at slow. Lieutenant Morgereth hung up possibles in both rapid-fire positions. Pvt. Frank Gemmill, 3rd., put them all in the bull at prone rapid, and came through with a 49 at offhand rapid.

This may seem to be a good deal of space to give to the doings of a single club. However, Glenelg is more than a club—it has reached the dignity of a movement. It represents a new and finer application of the sport of marksmanship. The club and its founder are blazing a trail which others, who are in a position to do so, might well follow.

AND early the next morning the Western Union Office at Antwerp delivered to Team Captain Boles five hundred American dollars.

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Conducted by H. H. Goebel

Biweekly Matches October 11–December 6

AGAIN the biweekly program of team matches will hold favor during the gallery season for all affiliated Junior Rifle Clubs. These matches, conducted every other week over a period of eight months, have been successful since their inauguration in 1927. Perhaps the reason for this is the fact that there are no handicaps or the direct matching of one team against another, but rather, all teams compete over the same course for standing in divisions consisting of teams of their own relative shooting strength.

Approximately 75 teams have fired regularly each year through the complete schedule which is broken down into three short series. This plan makes it possible for late entries to win one or two of the series of matches, while those starting at the beginning have three chances of winning throughout the year.

The complete schedule of firing for the 1930-31 season will consist of fifteen matches, five in each series. The opening match for the first series is scheduled for the week ending October 11. Five matches in order, fired biweekly through the week ending December 6, rounds out the first series. Allowing for a short interruption in activity during the Christmas season, the second series starts with the week ending January 10 and ends with the week ending March 7. The third series, also of five matches, follows immediately with the match of the week ending March 21 and continuing through the week ending May 16. Winding up these matches early, members of school clubs are left free to prepare for their final examinations and commencement activities.

As a means of encouragement for better individual and team scores each series of matches is broken down into three divisions or classifications. These are referred to as Divisions A, B, and C. Although teams consist of ten shooting members in each match, the five high scores determine the team score, and it is the score of the first match that places a team in either of the three divisions. Teams then fire in their respective divisions throughout the remainder of the series, provided their scores have not increased to warrant their advancement

to a division of higher rating and keener competition.

The select, or A Division teams, are those more experienced. This division consists of teams making five-man scores of 480 or better out of a possible 500. Teams compete for places in each match, and the ten leading teams are credited with points in multiples of 30 up to 300 (winner 300, second 270, etc.). Throughout the series of five matches it is possible for a team winning all matches to total 1,500 points. The three high teams in the number of points are then awarded special trophies.

The less-experienced teams capable of turning in average scores of 455-479 are grouped in Division B. Again these teams compete for places in each match for points which are distributed in multiples of 20 up to 200 (winner 200, second 180, etc.). Should a team take first place in the five matches its total credits would be 1,000. The three high teams at the conclusion of the series also receive appropriate trophies.

Division C consists mainly of newly organized or clubs that have had little or no experience in competitive team firing. These teams, too, compete for standing in each match for points. Multiples of 10 up to 100 are given the ten high places and trophies to the three high teams at the close of the series.

On the above arrangement teams are always competing on an even basis among teams of like standing. Further, the flexibility of the plan automatically takes a team from a lower to a higher division rather than hold them in a classification in which they are first entered. Credit is established for the match and division in which the team score is made, but they are listed among teams of higher classification in the matches to follow. Stepping into closer competition these teams carry over with them the points gained in the lower divisions.

This added inducement tends to create more uniform competition and encourages teams at all times to better their standing. In the past approximately 40 per cent of the C Division teams have been advanced to Division B and 20 per cent of the teams in B to Division A. Teams once classed are

not, however, permitted to drop to a lower division. In fact, rather than reclassify each team at the beginning of each of the three series of matches, they will carry on through the remaining series in the division in which they last fired. New clubs entering for the first time regardless of the series entered will be classed according to their first team score.

Bulletins giving the complete standing of teams in their respective divisions with their points are issued promptly after each match. Points are totaled for each succeeding match, and at the close of a series the three high teams in each division receive trophies. When all three series of matches are completed the high team in each division is awarded a special trophy and the five members making up these teams receive special medal decorations.

It often happens that several teams have a like score in a match. In such cases all receive a like number of credits or points. However, when a tie in the aggregate points over a series, it is broken, first, by the number of matches completed, and second, by the aggregate team scores over the series.

The entry fee for a full series of five matches is but \$1 per team. Clubs may enter as many teams as they wish, but competitors may fire on but one team. Entries should be made early, so that the special targets will be on hand in time for the opening match. All targets for the five matches with the conditions of fire are mailed to instructors under one cover. Returns are made for each match, placing the name of the club and address plainly on the targets. Each competitor must also give his name and address. The signature of the instructor or some one appointed by him as witness of the firing must also be given. Targets received after the return date specified for each match are rejected.

Matches week ending—	Returns not later than—
October 11	October 16
October 25	October 30
November 8	November 13
November 22	November 27
December 6	December 11

In addition to the regular series of prone

matches, four-position matches were attempted for the first time last season. These were fired along the same schedule. Several of our prone teams were desirous of shooting the position matches but were deprived from doing so for lack of time on the range. Other teams wished to devote more time to qualification firing. At the suggestion of a number of instructors the course has been shortened to two positions—prone and standing—for the coming term.

The general conditions apply to this special division called the Expert Division, although teams consist of seven competitors, 5 high total scores to count and each competitor fires 20 shots for record, 10 in each stage. The entry fee is \$1 per team per series, and targets are mailed for a complete series. Matches are fired and returns made according to regular schedule. In this division clubs, too, may enter as many teams as they wish, but competitors may fire on but one team. Where a club enters one or more teams in both the prone and position matches, individuals may fire on but one team in each division of matches.

There is no breakdown by classes in this special division, all teams firing for position in each match. Points are allotted for standing, the ten high teams receiving credits of 10 to 100 in each of the five matches (winner 100, second 90, etc.). At the close of each series the team with the highest number of points receives a trophy, and the team with the high aggregate points over the three series receives a special trophy, and five medals are awarded the team members.

GENERAL CONDITIONS

(a) Prone Matches

(b) Position Matches

Open to.—Junior Rifle Clubs affiliated and in good standing with the N. R. A.

Teams.—(a) One or more teams of ten members may represent each club in the prone matches, but no one member may fire on more than one team. (b) One or more teams of seven members may represent each club in the position matches, but no one member may fire on more than one team. Clubs may enter teams in both divisions.

Course.—(a) One stage, prone, 10 shots for record, 2 shots in each bull's-eye. Five high targets to count for team total. (b) Two stages, 10 shots prone, 10 shots standing for record. Five high total scores to count for team total.

Sighting shots.—No sighters allowed on record targets. Sighting shots may be taken on practice targets before firing match.

Rifles.—Any small-bore firing any .22-caliber rim-fire ammunition.

Sights.—Metallic.

Targets.—Official N. R. A. J. R. C. five-bull (targets furnished).

When fired.—At any time during two-week period designated for each match. An entire stage must be completed the same day started.

Entrance fee.—\$1 per team per series. Entries will be made by letter.

Returns.—(a) Ten targets for each match.

(b) Fourteen targets for each match, fired or unfired, must reach Washington within five days after close of each match. All targets not properly executed will be disqualified.

Periods.—Three periods of biweekly matches: October 11–December 6; January 10–March 7; March 21–May 16.

Classifications.—(a) Teams classified in Divisions A, B, and C by scores submitted in first match, but allowed to advance at any time during a period of matches. Division A teams compete for ten high places for points in multiples of 30 up to 300 in each match; Division B teams compete for first ten places for points in multiples of 20 up to 200; Division C teams compete for first ten places for points in multiples of 10 up to 100. Teams entering succeeding series compete in the division in which they were last classed. (b) No classification in Expert Division. Teams will compete for ten high places in each match for points in multiples of 10 up to 100.

Prizes.—(a) Trophies to the three teams having the highest aggregate number of points in each division at the close of each period or series. Special trophy and five medals to the team in each division having the highest aggregate number of points at the termination of the three periods. (b) One trophy to the team having the highest aggregate of points at the termination of each series of matches in the Expert Division. One trophy and five medals to the team having the high aggregate over the three series.

Ties.—Decided first, by the highest number of matches completed in a series; second, by the aggregate five-man-team scores in all matches completed during a series.

NEW CORRESPONDENCE INSTRUCTORS' TRAINING COURSE

THE following lesson, "Range Construction," is the ninth of a series of ten lessons to appear in succeeding issues of the *News*. Prepared primarily for instructors of Junior Rifle Corps clubs and adults who are newcomers in the shooting game, the course contains various subject matters not covered in the "Instruction Manual."

These articles with questions for answer are attached to each and are available for distribution in pamphlet form. Instructors submitting answers to the complete course will be issued an instructor's commission in the Junior Rifle Corps.

RANGE CONSTRUCTION

(Reading Assignment: Chapter 10, "Instruction Manual.")

Safety is the one primary consideration in the construction of a rifle range. The others are accessibility, comfort, ease of control, light. Never sacrifice safety for any of them or all of them together, important as they are.

Ranges are divided into two general types—indoor (gallery) and outdoor. As the range distance for Junior work is 50 feet,

measured from firing point to target, a space 60 feet minimum length is required. A minimum width of 4 feet should also be allowed for each firing point, although 5 feet is better.

Indoor Ranges.—Backstops are best constructed of $\frac{1}{4}$ -inch or $\frac{3}{8}$ -inch steel plates hung at an angle of 30 to 45 degrees behind the targets so as to deflect the bullets downward. A box containing about 6 inches of dry sand should be placed at the base of the backstop to catch all splatter. Never depend on a brick or concrete wall as a backstop; .22-caliber bullets will chip brick and concrete in a surprising way, and these chips will play havoc with targets and lights.

A wooden backstop is apt to be unsatisfactory, as wood is gradually eaten away by the constant peppering of the .22's and if the boards are not replaced frequently there is danger of bullets going through. However, logs cut about 2 feet in length and piled on their sides with ends toward the firing point, with sheet iron as a precaution placed behind them, make a very firm backstop. A piano box filled with sand has been used very satisfactorily for a short period. As the boarding is rapidly cut away the sand will gradually leak out through the holes, but as long as the boards are replaced and the sand repacked the backstop is perfectly safe. Doors and windows at the backstop must be protected. If behind the backstop or at the ends they should be covered with steel. Those along the side of the room may be protected with 2-inch planking or by building a screen straight out from the wall on the side toward the firing line. The screen must project far enough to prevent a shot fired from any point from angling through the window.

Firing points should be open, so that the instructor or range officer may have the entire range under his supervision from any point behind the firing line. Firing should be done from the floor or from gymnasium mats placed on the floor.

Heating and ventilation must also be considered. In a close space powder fumes will become very unpleasant, while a cold dismal range means a steadily diminishing group of dissatisfied shooters.

Lighting is best accomplished by electric lights, although gas or natural lighting from side windows or skylights may be used. Lights may be placed above or below the targets or on uprights between the targets. They should be provided with reflectors or flood-light lenses. Target trolleys for carrying the target from the firing point to backstop and return are a great convenience and make for added safety and increased speed in operation. (See "Instruction Manual.")

Outdoor Ranges.—The direction of fire on an outdoor range should if possible be north or northeast. This affords the best light for all-day shooting.

As the maximum range of the .22 long-rifle cartridge is nearly a mile, the backstop must both be high enough and wide enough to prevent any possible stray shots from getting off the range. A steep hill is the best

backstop. If the hill is gentle in slope it should be dug out, so that the space behind the targets presents a perpendicular surface. Bullets will ricochet off rocks and keep traveling, so that large, flat rocks should be avoided behind the targets.

Artificial backstops may be constructed of sheet-steel or rough cribbing filled with dry earth and sodded on top. Where cribbing with an earth fill is used, remember that the .22 will punch a hole through the wood and earth with surprising rapidity. Keep the cribbing well filled with earth. *Do not use rocks.* The cribbing should be at least 3 feet thick, 8 feet high, and should project at least 6 feet beyond the ends of the target frames.

Target butts on the usual small-bore range consist of two upright posts set 8 to 10 feet apart, extending above the ground 5 or 6 feet. These are generally faced with rough boards painted dark green or black. Into each post drive two heavy nails, leaving the heads extending out about an inch on which to hang the target frames, one at the proper height for prone targets, the other at the proper height for standing targets. On the face of the butts white numerals are painted on 24-inch to 30-inch centers to designate the targets.

Target frames are then constructed of 1 x 3-inch material 8 to 10 feet in length and of a proper width to accommodate the targets. Sturdy screw eyes are screwed into the top of each frame at the ends, so that they may be hooked over the nails which have been driven into the butts. The frame is then hung on the butts and black lines drawn on the frame to indicate where the targets must be placed in order to come directly under the numerals which have been painted on the butts. Targets may be fastened to the frame with thumb tacks, or wire nails may be driven through the frame from the rear so that the points project about 1 inch or 1½ inches through the front. Four nails, one for each corner of the target, enable the range officer to quickly place the targets on the frame and to quickly remove them after they have been fired. Two such frames should be provided for each set of butts, so that while one squad is firing the next squad may be getting their targets on the frame ready to start shooting.

Firing points should be indicated by good-sized stakes painted white and numbered to correspond with the numbers on the target butts, so that a shooter may always be sure of the target he is supposed to be firing on. The firing point if possible should be raised about 1 foot off the ground at the forward side and should be graded down to the natural ground level about 6 feet to the rear. This construction provides a comfortable position for the shooter, brings the line of sights above the usual growth of bunch grass and weeds, and provides drainage. Platforms and shelters may be constructed at the firing point, but they must be solidly constructed, and separate flooring should be used behind the 6 feet devoted to actual firing in order to eliminate vibration when

coaches or spectators move around behind the shooters.

Detailed information for the construction of indoor and outdoor ranges is given in the "Instruction Manual." Blue prints for the construction of both types are available at National Headquarters for the asking.

RIFLE RANGES IN THREE HUNDRED CAMPS

THE private and institutional boy and girl camps throughout the country are extending the program of the Junior Rifle Corps to their campers as never before. Through these camps, which vary in enrollment from twenty to one thousand, the directors have made it possible to reach thousands of our youth who would not otherwise have had an opportunity to learn the proper handling of the rifle and its use as a constructive sport.

Fully three hundred camps now have rifle ranges in operation. Some of these are by no means elaborate, while others are of the highest type with permanent sheltered structures at the firing points in which lockers and racks are installed for accommodating all shooting equipment. The directors of these camps realize the many benefits of this training and the far-reaching service they are rendering to the country.

Having every consideration for the many details encountered by the directors and their associates in conducting a complete camp schedule over a short period of two months, National Headquarters has co-operated to the best of their ability by eliminating as much of the routine and statistical work as possible. Camps that were previously affiliated had simply to submit their reaffiliation fee and requirements early in the year in order to be assured of having all working material on hand at the opening of camp. Counselors assigned to instruct rifle-shooting were acquainted with the Junior Rifle Corps program of medal decorations and supplied with all necessary instruction literature. Many of them completed the ten lessons of the Correspondence Instructors' Training Course for a commission. As the names of the campers were submitted they in turn received their individual books and membership buttons.

Further, to eliminate the delays that occur in the mails when shooting records are first submitted and decorations then forwarded, camps were supplied on request with a consignment of the various decorations in file for immediate presentation to members as the necessary qualifying scores were made. Some of these consignments were paid for, while others are to be accounted for when the records are submitted for each qualification. All unused awards are returned at the close of the season for credit or a refund as the case may be. In addition to the medal decorations the corresponding diplomas were also supplied. Camp directors have appreciated this added time-saving service, which has not only made every camper a lasting enthusiast but has made it possible for the counselor to devote more of his time and thought to the activity.

Records for achievement are not yet available, but those camps that have received their charters and are actually offering this training in marksmanship and the program of the Junior Rifle Corps qualifications follow:

CAMPS AFFILIATED

Camp	Location
ABENA—Belgrade Lakes, Me.	
ABENAKIS—China, Me.	
ABNAKI—North Hero Island, Vt.	
ADIRONDACK—Glenburnie, N. Y.	
AGAWAM—Crescent Lake, Me.	
ALLEGHANY—Clifton Forge, Va.	
ALLEGHANY—Rondeverte, W. Va.	
ANDROSCOGGIN—Wayne, Me.	
ANTHONY WAYNE—Welcome Lake, Pa.	
APACHE—Conway, N. H.	
ARAPAHO—Sperry Springs, N. J.	
ARBUTUS—Mayfield, Mich.	
ARCADIA—Casco, Me.	
ARROW—Coeur d'Alene, Idaho	
BAITING HOLLOW—Port Jefferson, N. Y.	
BARTA—Casco, Me.	
BEDFORD—Bedford, Ind.	
BIRCH ROCK—East Waterford, Me.	
BLACK BEAR—Marion, N. C.	
BLACK FOXE MIL. INST.—Elsinore, Calif.	
BON AIR—Nashville, Tenn.	
BONAVENTURE—New Mills, N. B., Canada	
BOOTHBAY—Bath, Me.	
BOYCROFT—Wolfboro, N. H.	
BRINTON—Agency, Mo.	
BROOKLYN SCOUT—Narrowsburg, N. Y.	
BROWN LEDGE—Mallets Bay, Vt.	
BROWN MEMORIAL—Abilene, Kans.	
BURCH—Beulah, Colo.	
BURKE—Preston, Okla.	
CADDIE—Kins, Me.	
CALUMET—Canaan, N. H.	
CARE AWAY—Galena, Mo.	
CAROLINA—Brevard, N. C.	
CAUBLE—Benedict, Kans.	
CHAPMAN—Ardmore, Okla.	
CHELEY COLORADO—Estes Park, Colo.	
CHEROKEE—Reidsville, N. C.	
CHESNOR—Telford, Pa.	
CHEWONKI—Wiscasset, Me.	
CHICKASAW—Brevard, N. C.	
CHICKAWAH—Harrison, Me.	
CHIEF OURAY—Granby, Colo.	
CHIMNEY ROCK—Chimney Rock, N. C.	
CHIPINAW—Swan Lake, N. Y.	
CHIPPEWA TRAIL—Rapid City, Mich.	
CLAYTON COLLEGE—Denver, Colo.	
COBBOSSEE—Winthrop, Me.	
COLLINS—Peekskill, N. Y.	
COSSBY—Birmingham, Ala.	
COURT OREILLES—Hayward, Wis.	
CRAG—Brunswick, Ohio	
CREVE CEUR—Bath, Ill.	
CROCKETT—Dallas, Tex.	
CULVER SUMMER SCHOOL—Culver, Ind.	
CUMBERLAND—Barbourville, Ky.	
CUNNINGHAM—Davis, Okla.	
DAMARISCOTTA—Jefferson, Me.	
DARTS—Daria, N. Y.	
DE LA WARE—Rehoboth Beach, Del.	
DE WITT—Wolfboro, N. H.	
DOCTOR PETTIT—Shelter Island, N. Y.	
DODGLAS—Pacific Grove, Calif.	
DUDLEY—Westport, N. Y.	
EASTFORD—Eastford, Conn.	
EBERHARDT—Corey, Mich.	
ECHOKEETEE—Jackson, Fla.	
ELKLORE—Winchester, Tenn.	
ELLIOTT—Old Fort, N. C.	
FAIRWOOD—Torch Lake, Mich.	
FERNWAY—Monterey, Cal.	
FIRE PLACE LODGE—East Hampton, N. Y.	
FLEUR DE LIS—Fitzwilliam, N. H.	
FOREST LAKE—Warrensburg, N. Y.	
FRENCH BROAD—Brevard, N. C.	
GERMANTOWN—Fredericksburg, Pa.	
GRAYSTONE—Greensboro, N. C.	
GREAT EAST LODGE—Sanbornville, N. H.	
GREAT LAKES—Fairview, Pa.	
GREATLOCK—Dublin, N. H.	
GREENBRIER—Alderson, W. Va.	
GREY ROCKS—East Hebron, N. H.	
HALF MOON—Great Barrington, Mass.	
HANES—King, N. C.	
HA-WA-YA—Harrison, Me.	
HAWTHORNE—Raymond, Me.	
HEALTHLAND—Crescent Lake, Me.	
HIAWATHA—Cornish, Me.	
HIGHLANDS—Sayner, Wis.	
HILLTOP—Kelsey, N. Y.	
HYDE—Hutchinson, Kans.	
IDLEWILD—Lakeport, N. H.	
INDIAN ACRES—Fryburg, Me.	
INDIANOLA—Madison, Mo.	
INTERLOCHEN—Interlochen, Mich.	
IRONWOOD—Harrison, Me.	
IROQUOIS—Melvor, Mich.	
IROQUOIS—Penn Yan, N. Y.	
JAMES J. WILSON—Frenchtown, N. J.	
JOHNSON—Worthington, Ohio	
JUNALUSKA—Lake Junaluska, N. C.	
KAMPS—Branson, Mo.	
KAATERSKILL—Pownal, Vt.	
KABEYUN—Alton Bay, N. H.	
KAHAGON—Hardwick, Vt.	
KAIRPHEE—Alpena, Mich.	
KATAHDIN—Sweden, Me.	
KAWANHEE—Weld, Me.	
KEARSARGE—South Casco, Me.	
KEE-MO-SAH-BEE—Mullet Lake, Mich.	

KEN-MONT—Kent, Conn.
 KENNEBEC—North Belgrade, Me.
 KEYSTONE—Brevard, N. C.
 KIAMESHA—Newton, N. J.
 KILL KARE—St. Albans Bay, Vt.
 KN-UN-HE—Roswell, N. Mex.
 KODA—Bridgton, Me.
 KOCH-ICHING—Rainier, Minn.
 LAPAYETTE—Merrill, N. Y.
 LAKE DELAWARE BOYS—Delphi, N. Y.
 LAKE GEORGE—Glen Eyrie, N. Y.
 LAKE HUBERT (Girls)—Hubert, Minn.
 LAKE POCAHONTAS—Meadow View, Va.
 LAUREL FALLS—Clayton, Ga.
 LAUREL RUN—McAlevey Fort, Pa.
 LAWRENCE—Lakeport, N. H.
 LEALE—Taneycomo, Mo.
 LE CONTE—Elkmount, Tenn.
 LENAPE—Rafton, Pa.
 LINCOLN—Hubert, Minn.
 LINCOLN—Keesville, N. Y.
 LINCOLN HILL—Foxboro, Mass.
 LITTLE BEAR—Thompson Ridge, N. Y.
 LONG LAKE LODGE—North Bridgton, Me.
 LOOKOUT MOUNTAIN—Mentone, Ala.
 LOUIS ERNST—Madison, Ind.
 MCCOY—Pine Crest, Calif.
 MACHIGONNE—Raymond, Me.
 MANITOWISH—Boulder Junction, Wis.
 MANNING—Andover, Mass.
 MAQUAM—Swanton, Vt.
 MARIST—Lakemont, Ga.
 MARSTON—San Diego, Calif.
 MARY-DELL—Abilene, Kans.
 MASCOMA—Enfield, N. H.
 MASHNEE—Monument Beach, Mass.
 MASSASOIT—Bourneville, Mass.
 MATOAKA—St. Leonard, Md.
 MECHANO—South Casco, Me.
 MEDOMAK—Washington, Me.
 MENATOMA—Kenta Hill, Me.
 MILLER—Sturgeon Lake, Minn.
 MINNEWAY—Raymond, Me.
 MINNE WONKA (Boys)—Three Lakes, Wis.
 MINNE-WONKA LODGE (Girls)—Three Lakes, Wis.
 MISHE-MOKWA—West Alton, N. H.
 MISHE-MOKWA—Bear Wallow, N. C.
 MITCHELL-HARLEE—Tyler Hill, Pa.
 MITIGWA—Rangeley, Me.
 MITIGWA—Slabets, Tex.
 MOCCASIN—Lochmere, N. H.
 MOHICAN—Blairtown, N. J.
 MONADNOCK—Jaffrey, N. H.
 MONOMOY—East Brewster, Mass.
 MOOSALAMOO WIGWAM (Keewaydin)—Salisbury, Vt.
 MOOSILAUKE—Pike, N. H.
 MOSS—Youngstown, N. Y.
 MOOSE LAKE—Eagle Bay, N. Y.
 MOWGLIS—East Hebron, N. H.
 MOWANA—Readfield, Me.
 MYSTIC—Kerville, Tex.
 NAKANAWA—Maryland, Tenn.
 NAKAGANSEW—Casco, Me.
 NATICK SCOUTS—Bourneville, Mass.
 NEE-AH-GAH-NEH—Youngstown, N. Y.
 NEVADA BOY SCOUT—Lake Tahoe, Nev.
 NOKOMIS—Harrison, Me.
 NORTH STAR—Cass Lake, Minn.
 NORWICH—Huntington, Mass.
 OAH—Munsonville, N. H.
 O-AT-KA—East Sebago, Me.
 OGONTZ WHITE MT.—Lisbon, N. H.
 ONEIDA—Woodgate, N. Y.
 OSCEOLA—Hendersonville, N. C.
 OSH-KLDE—Bruin, Pa.
 OSOHA-OF-THE-DUNES—Frankfort, Mich.
 OTTUMWA—Ottumwa, Iowa
 OWAKONZIE—Ontario, Canada
 OWL HEAD—Lake Memphremagog, Vt.
 PASSACONAWAY—Bear Island, N. H.
 PASSAGASSY—Brooks, Me.
 PASSUMPSIC—Ely, Vt.
 PAWNEE—Southington, Conn.
 PAYSOCK—Brooks, Me.
 PENN—Valcour, N. Y.
 PENN LOCH—Interlochen, Mich.
 PERRY—Perry, Ohio
 PINE BLUFF—Fort Jefferson, L. I., N. Y.
 PINE TREE—Pocono Pines, Pa.
 PINNACLE—Lyme, N. H.
 PINNACLE—Hendersonville, N. C.
 PIONEER—Winsted, Conn.
 PLYMOUTH—Ludlow, Vt.
 POCONO—Tobyhanna, Pa.
 POCONO PINES—Pocono Pines, Pa.
 POMEROY—Greenwich, Mass.
 POTAWATOMI—South Milford, Ind.
 QUEST—Rockwood, Me.
 RANCHO CARMELO—Carmel Valley, Calif.
 RANGER—Wharton, N. J.
 RAQUETTE LAKE—Raquette Lake, N. Y.
 RED ARROW—Woodruff, Wis.
 RED CLOUD—Brackney, Pa.
 RED WING—Brackney, Pa.
 RIDGECREST—Ridgecrest, N. C.
 ROBIN HOOD—Herricks, Me.
 ROCKBROOK—Brevard, N. C.
 RODNEY—Northest, Md.
 RO-FRE-LA—Delaware, Ohio
 ROGERS KEMP—Grove, Okla.
 ROOSEVELT—Monticello, N. Y.
 ROOSEVELT—Perry, Ohio
 ROPIOA—Harrison, Me.
 ROTHERWOOD—Alfred, Me.
 SACHEM COUNCIL—Antrim, N. H.
 SAGAMORE—Hague, N. Y.
 SAINT BERNARD'S—Gile, N. Y.
 SAINT JOHN'S—Hancock, N. Y.
 SAINT JOHN'S—Delafield, Wis.
 SAMOSET—Gifford, N. H.

SAN LUIS VALLEY—South Fork, Colo.
 SAPPHIRE—Brevard, N. C.
 SCHOODIC—Columbia, Me.
 SENECA—Portageville, N. Y.
 SEQUOYA—Bristol, Va.
 SEQUOYAH—Beech, N. C.
 SERRANA—Pike, N. H.
 SHERWOOD—Boys City, Mich.
 SHERWOOD FOREST—Alton, N. H.
 SHAWANO—Covington, Va.
 SHAW-MI-DEL-ECA—Lewisburg, W. Va.
 SHAWONDOSSEE—Michillinda, Mich.
 SHELTER—Brattleboro, Vt.
 SINGING EAGLE LODGE—Center Harbor, N. H.
 SKYLARK—Billeria, Mass.
 SLOANE—Lakerville, Conn.
 SNOWY MOUNTAIN—Sabael, N. Y.
 SOKOKIS—Bridgton, Me.
 SONGADEWIN (Keewaydin)—Barton, Vt.
 SOUTH BERGEN SCOUT—Oakland, N. J.
 SOUTH POND CABINS—Pittsford, N. H.
 SPARTA—Bucksport, Me.
 STEWART BOYS—Kerrville, Tex.
 STONE HILL—Hayward, Wis.
 STORER—Toledo, Ohio
 SUNRISE—Orwell, Vt.
 SUNSET—Greenfield, N. H.
 TALKING MOUNTAIN—Echo Lake, Calif.
 TAWASI—North Sherburne, Vt.
 TAY LOW—Mobile, Ala.
 TECUMSEH—Delphi, Ind.
 TEELA-WOOKET—Roxbury, Vt.
 TERRA ALTA—Terra Alta, W. Va.
 THEODORE ROOSEVELT—Plattsburg, N. Y.
 TICONDEROGA (Boys)—Ticonderoga, N. Y.
 TICONDEROGA (Girls)—Ticonderoga, N. Y.
 TILDEN—Pineville, Mo.
 TIMANOUS—Raymond, Me.
 TIP—Clayton, N. Y.
 TOM TUCKER RANCH—Nederland, Colo.
 TONDE—Porters Corner, N. Y.
 TOYON—Catalina Island, Calif.
 TRINITY—Beachwood, N. Y.
 TUNIS LAKE—Andes, N. Y.
 TUNNEL MILL RESERVATION—Charles-town, Ind.
 TUSCAZOOK—Canton, Ohio
 TWIN ECHO—New Florence, Pa.
 URBAN SUMMER CAMP—Yosemite National Park, Calif.
 VIRGINIA—Goshen, Va.
 WABINGO—Michillinda, Mich.
 WABUN ANNUNG—Kerrville, Tex.
 WAHTONAH—Brewster, Mass.
 WALDEMAR—Hunt, Tex.
 WALLAWHATOLLA—Millboro Springs, Va.
 WAMEGO—Corinth, N. Y.
 WAMPANOAG—Buzards Bay, Mass.
 WANAKI—Cass Lake, Minn.
 VAPELLO—Friendship, Me.
 WASHINGTON—Long Valley, N. J.
 WAWANOCK—Jefferson, Me.
 WEBB—Wallis, Tenn.
 WENTWORTH—East Wolfeboro, N. H.
 WEW—Orlando, Fla.
 WHITE MOUNTAIN—South Casco, Me.
 WHOOPPEE—Bloomington Springs, Tenn.
 WICKABOAG—West Brookfield, Mass.
 WIGWAM—Harrison, Me.
 WI-HA-KO-WI—Northfield, Vt.
 WILMERE—Harrison, Me.
 WILLET—Anniston, Ala.
 WILLIAM LAWRENCE—Center Tuftonboro, N. H.
 WINAUKKEE—Winnepeaukee, N. H.
 WINDSOR MOUNTAIN—Hillsboro, N. H.
 WINNECOOK—Unity, Me.

WINNECOWAISA—Orleans, Mass.
 WINONA—Denmark, Me.
 WONALANCET—Eaton Center, N. H.
 WONPOSET—Bantam Lake, Conn.
 WOOD—Elmdale, Kans.
 WOODLAND—Phoenicia, N. Y.
 WOTONDA—Meredith, N. H.
 WULAMAT—Bristol, N. H.
 WYCONDA—Belgrade Lakes, Me.
 WYODA—Ely, Vt.
 WYOMISSING—North Water Gap, Pa.
 WYONEE—Harrison, Me.
 YONAHNOKA—Linville, N. C.
 ZAKALO—Harrison, Me.

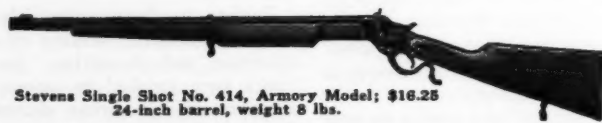
EXPERTS AND DISTINGUISHED RIFLEMEN

Charles P. Beasley, Quincy, Mass.
 Edgar Hansen, Elmwood Park, Ill.
 Stephen Johnson, Alberta, Canada
 W. H. Seamans, Factoryville, Pa.
 Donald Jones, Chickasaw, Ala.
 Virginia Kraft, Bristol, Va.
 Edward Lincoln, Providence, R. I.
 William Cole, Jr., Sandy Hook, Conn.
 Paul Giesecke, Rockville, Conn.
 Thomas Anderson, Tacoma, Wash.
 Joseph Olton, Harrison, Me.

During the vacation period many of our leaders are spending their leisure moments in gaining a better knowledge of the rifle and its instruction through lessons of the Correspondence Instructors' Training Course. Thirteen adults satisfactorily completed all requirements of this course in the last month, while one of our older members of the Corps won his commission as assistant instructor. We are listing those receiving certificates:

Richard Heiler, Altoona, Pa.
 L. B. Plummer, Roswell, N. Mex.
 Martha S. Ohlson, Pocono Pines, Pa.
 Frederick W. Brueckmann, Catonsville, Md.
 Lois Bailey, Los Angeles, Calif.
 Kipling B. Pellet, St. Louis, Mo.
 Raymond Sheets, St. Louis, Mo.
 K. D. Mathiot, Carmel, Calif.
 John M. Fletcher, Opelika, Ala.
 J. S. Edwards, Jr., Hackensack, N. J.
 Robert T. Rowe, Medina, Ohio.
 Edward French, Chicago, Ill.
 Madeleine C. Littlefield, Winthrop, Mass.

STANDARD EQUIPMENT AT ATTRACTIVE PRICES



Stevens Single Shot No. 414, Armory Model; \$16.25
 24-inch barrel, weight 8 lbs.

Stevens, "Armory Model" No. 414, single shot,
 22 Long Rifle, Bright Metal Knife Blade Bead
 Front Sight, Special Stevens Receiver Peep Sight
 with Windage and Elevation Adjustments..... \$16.25
 Used Leather Sling (used but in good condition)..... .75
 Lyman No. 42 Receiver Sight for Stevens..... 3.25
 Lyman No. 17, Aperture Sight for Stevens..... 2.50

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Conducted by E. F. Mitchell

N. R. A. Representative Attends Police Chiefs' Conventions

IN LINE with the promotion program of the N. R. A., the Police Division was represented at the 30th Annual Convention of the New York State Association of Chiefs of Police by E. F. Mitchell, who was called upon by Chief McCarthy, president of the Association, to speak before the chiefs and outline to them how the N. R. A. wish to help promote marksmanship in police departments. It was at this convention that a legislative committee was appointed for the purpose of assisting in the preparation of a bill which will be presented to the New York State Legislature next fall relative to firearms, etc. Capt. A. E. Moore, of the New York State Troopers, was made chairman of this committee, and he stated he would appreciate assistance and co-operation from the N. R. A. on this subject.

Mr. Mitchell also attended the 37th Annual Convention of the International Association of Chiefs of Police, held at Duluth, Minn., August 4 to 7, inclusive. Chief Philip T. Bell, president of the Association, gave him an opportunity of addressing the convention at the opening session, so that the chiefs might hear in detail the story of the National Police School conducted at Camp Perry. As a result of the opportunity of putting this story over before such a gathering of police chiefs, there will be several new police departments represented at Perry this year.

BOSTON POLICE ARE REAL MARKSMEN

THAT the Boston Police Department are boosters for the National Rifle Association is evidenced by the fact that there are twenty clubs affiliated with the N. R. A., one club being the Headquarters Club and the other nineteen clubs being located in the various police stations throughout the city of Boston.

Under the able instruction and direction of Capt. Louis E. Lutz, the Boston Police Team won the 1929 New England Police Revolver Championship Matches. Police teams from all parts of New England participated in the matches, which consisted of a series of ten matches for police teams of four men each. It was during these matches that Officer Wm. T. Desmond made the phenomenal score of 297 x 300.

In June, while competing in the annual match of the Connecticut State Rifle Association, fired on the range of the Hartford Gun Club, Officer Desmond again demonstrated his ability by winning first place in the Police Match, first place in the Championship Match, and first in the Grand Aggregate. The Championship Match was fired over the national pistol course.

Special practice for members of the Riot Gun Battalion and officers attached to the Special Service Unit was held at Camp Curtis Guild, Wakefield, Mass., June 23 to July 23. During that time 388 officers of the battalion and 32 officers of the Special Service Unit reported twice for practice. There were 22 days of actual practice, divided into two periods of 11 days each, approximately 37 officers reporting each day.

The instructions in the first period consisted of a thorough explanation of the working of the mechanism of the Winchester riot gun and how to load, unload, and carry it with safety. This was explained with the use of dummy shells. Each officer was required to dismount and assemble the Thompson sub-machine gun, and he was instructed as to how each part functioned. Before shooting each man was required to stand in the proper position with the particular weapon to be used. A fifteen-minute talk was given each day of the first period on the law relative to the use of a firearm by each officer—i. e., when to use and when not justified in shooting.

The firing consisted of 3 shots with the riot gun at a silhouette target at 75 feet; possible number of pellets in the body was 27. Hits were counted and scored, with an average number of hits at about 20.

Machine-gun fire consisted of rapid firing and slow (semiautomatic) fire, from the hip and shoulder at an Army pistol target at 25 yards, 20 shots per man. Remarkable scores were made by the men, practically all making qualifying scores.

The revolver-shooting was done at 20 yards, each man firing four strings of 5 shots each with the .22-caliber revolver and two strings with his own service revolver. The second visit to the camp consisted of a duplication of the practice as outlined for the first trip. Considerable improvement was shown on the

second visit. This practice was in charge of Drill Master Capt. Louis E. Lutz, who is also instructor. He was ably assisted by Lieut. Thomas S. J. Kavanagh, Patrolmen Edward J. Seibolt, Edward H. Vail, William T. Desmond, and Charles Bailey, who served as range officers and also as instructors.

Practice of this kind is an innovation in police work, and the Boston Police Department is fortunate in having such a capable set of instructors as those listed above.

DELAWARE & HUDSON RAILROAD MARKSMEN OUTSHOOT HARTFORD POLICE FORCE TEAM IN GUN CLUB TOURNAMENT

On July 23 a five-man team representing the Delaware & Hudson Railroad Police defeated a team composed of the foremost marksmen of the Hartford Police Force in a special revolver tournament at the Hartford Gun Club. The score was 1,328 to 1,288.

The out-of-town team, whose members live in Albany, N. Y., Catskill, N. Y., and Wilkes-Barre, Pa., arrived early to compete with the Hartford team as part of their preparation for the national revolver shoot of Camp Perry.

The visitors were entertained during their stay here by members of the local police department, and following the match were guests of the vanquished team at a dinner in the Sea Gull restaurant, later entraining for home.

Headed by Capt. J. H. Overbaugh, the visiting team was composed of Lieut. C. W. Bentley, B. R. Masco, H. J. Russ, L. B. Pennington, and Leo Gratcofsky. The local team was in charge of Capt. Edward J. Langrish, Jr., commander of the Capitol Avenue precinct, and included Lieut. Henry McGann, Serjts. Thomas Rice and Edward L. Dion, and Policeman John Bout.

The highest individual score was made by Policeman Gratcofsky, of the D. & H. Railroad Police, who shot a total of 284 out of a possible 300 points. Policeman Bout, of the Hartford team, led his outfit with an individual score of 274.

A LESSON FOR AMERICA

IT IS NOT a coincidence that the nation which has the most laws—the United States—likewise has the most disgraceful crime record. It is a historical fact that we can not cure a social problem merely by prohibitory legislation.

Revolvers and pistols have long been the favorite targets for American reformers. They argue that prohibiting them will curb crimes of all kinds. But they fail to recognize that anti-gun laws would disarm the good citizen but would not affect the well-financed, organized underworld.

No country in Europe is freer from crime than Switzerland, and it is the only country without laws governing firearms and in which the authorities actually encourage their possession and use. There is a lesson in this for America.

San Francisco Police Department Dedicate New Range

ON SUNDAY, July 6, the San Francisco Traffic Rifle and Revolver Club dedicated its new pistol range at Fort Funston, San Francisco. The dedication was in charge of Chief of Police William J. Quinn.

At Fort Funston, harbor defense of San Francisco, there was one 200- and 300-yard rifle range. Immediately adjoining the butts a 25-yard pistol range was located, all of these in the sand dunes on the cliff above the beach of the Pacific. Owing to the danger of stray shots from the rifle range, the personnel of the newly organized N. R. A. unit believed that a more secure range should be established, and they set about laying out, with the permission of the Commanding Officer at Fort Funston, a new pistol range.

The new range, entirely enclosed by a 10-

because of its attractive features the personnel of the entire department want to shoot. It is believed that this range is only the beginning of several similar ranges throughout the city, which will result from the splendid assistance given the N. R. A. State Secretary, James F. McCue, by Chief William Quinn.

With 37 officers competing, the San Francisco Police held a department pistol contest to select their representative at the National Police School and matches held at Camp Perry, Ohio, August 24 to September 15. Motorcycle Officer John A. Ahern was the winner.

On July 31 the annual contest for the Olympic Club trophy took place. This trophy was given by the Olympic Club for annual competition to promote and encourage marksmanship in the police departments of San Francisco, Oakland, Berkeley, Piedmont, Palo Alto, and all other communities of the San Francisco Bay area.

The Olympic Club trophy for the San Francisco Bay Area Police Revolver Team Championship was won by the San Francisco Police Department, firing .38-caliber revolvers, barrel length not over 6 inches, under artificial light, indoor gallery, 20 yards, 5 shots at five targets, within 30 minutes, per man. Each team



San Francisco Police Pistol Team.—Left to right, standing: Capt. Charles Goff, C. F. Crosbie, Capt. A. D. Layne, James McCue, N. R. A. State Secretary. Sitting: Myron Gurnea, John Ahern, Corpl. H. Deline, J. Dyer, Thomas Collins

foot barbed-wire fence, was built by the labor of about seven men of the club. The butts have a natural backstop in the sand dune; but this is supplemented by ½-inch steel boiler plate about 5 feet high and 22 feet wide, with 4 x 4 timbers on the sides. The bottom of the butts is concrete covered with sand. Along the flanks a board walk has been laid approaching the butts, where the frame uprights are of 3-inch pipe, cross pieces being of ½-inch pipe.

When using the Standard American target, six men may fire at the same time, but when using the 20-yard target, twelve firing points may be used. The firing shed is on rollers, thereby permitting its use on either the 20- or 25-yard line. This shed and all other woodwork around the butts is painted green.

In building the above range no assessment was made on the club members, public-spirited citizens contributing material and giving such co-operation as was asked for by the police. The range is a huge success, and

had 5 firing members.

San Francisco Police	1,003
Berkeley Police	988
Palo Alto Police	985
Oakland Police	887
Piedmont Police	797

The three high individual scores out of a possible 250, were:

Myron E. Gurnea, San Francisco	222
W. V. Compton, Berkeley	210
Thomas Collins, San Francisco	210

James F. McCue, State Secretary of the National Rifle Association, coached the winning team.

The marksmanship of San Francisco's Police has had the earnest consideration of Chief William J. Quinn for some time past; and his active promotion of these frequent revolver competitions, together with the Olympic Club's award of this trophy in encouragement of such organized pistol and revolver practice, has already tremendously increased the gun power of the local police.

William F. Blasse, Olympic Club, governor of the United States Revolver Association, was judge of the contest, and George E. Kimball, vice president of the United States Revolver Association, was the official witness.

NATION'S CAPITAL POLICE AT CAMP PERRY

WITH their trip to be financed by contributions from prominent men and women interested in the District Police Department, a team of fifteen men was named by Maj. Henry G. Pratt, superintendent of police, to represent the District department in the national shooting matches which are to take place at Camp Perry, Ohio, under the auspices of the National Rifle Association.

Their participation in the pistol-shooting matches, however, will be only a part of the activities of the District's representatives from the Police Department. The major part of their time will be devoted to study and training at the National Police School conducted for a week at the annual shooting matches. In the school the men are taught jujitsu, how to disarm persons, various safety holds and grips and other things for their protection in dealing with desperate criminals.

Members of the team, the first to be sent from the District department, will be assigned to the teaching of their fellow policemen on their return to the National Capital, Major Pratt said.

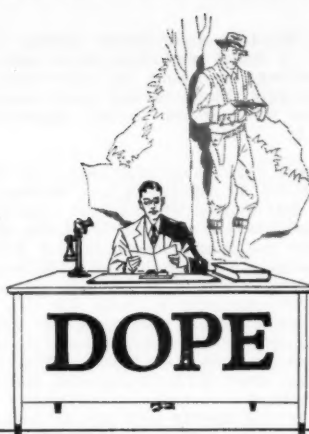
Lack of an appropriation to meet the expenses of the trip to the school brought a proposal from a wealthy retired business man that the expense be defrayed out of contributions.

In order to cut down expenses the men have pooled their resources and will drive to Camp Perry in their own automobiles. Approval of the trip has been given by Commissioner Herbert B. Crosby.

Lieut. L. E. Kelly was named as commander and financial officer of the party, and Pvt. E. C. Moore was named team captain, to be assisted by Pvt. S. R. McKee. Several of the men named to the team are considered fine pistol shots, and the team is expected to make a good showing in competition with marksmen from all sections of the country.

Other members of the team are Pvts. J. R. Birch, G. R. Wallrodt, J. G. Austin, H. D. Larey, A. C. Poulson, D. O. Fletcher, E. J. LaForce, W. R. Ostrom, V. V. Vaughn, J. F. Phelps, and E. L. Warden.

Major Pratt said he believed the training the men would receive at Camp Perry and other benefits to be derived from representation of the District department there would justify an annual appropriation to pay the team's expenses and that he would seek such an appropriation next year.



RIFLES AND BIG-GAME HUNTING: LT.-COL. TOWNSEND WHELEN AND F. C. NESS

SHOTGUNS AND FIELD SHOOTING: CAPT. CHARLES ASKINS

PISTOLS AND REVOLVERS: MAJ. J. S. HATCHER

EVERY CARE IS USED IN COLLECTING DATA FOR QUESTIONS SUBMITTED, BUT NO RESPONSIBILITY IS ASSUMED FOR ANY ACCIDENT WHICH MAY OCCUR.

A Free Service to Target, Big Game and Field Shots — All questions answered directly by mail

Some Aspects of Rifle Accuracy

By TOWNSEND WHELEN

I VERY much desire your opinion as regards the comparison of the accuracy of the N. R. A. sporting model Springfield rifle of .30 caliber and the type T heavy-barreled rifle. I don't exactly mean accuracy alone, but dependability of the rifles holding their zero from day to day without sight readjustments.

For example, if an expert rifleman from a steady M. & E. rest were to fire a sporting type Springfield 10-shot strings, firing one 10-shot string each day for the ten days with exactly the same sight adjustments, and using the same target; and then with all conditions exactly equal this same rifleman would fire a type T Springfield with the heavy barrel, a like number of shots, or one 10-shot string each day for ten successive days at the same target, how do you judge the two 100-shot groups would compare as to size?

Of course I mean that a different target, or rather a separate target, be used for the firing of each rifle, so that at the end of ten days two targets would be had, each having 100-shot groups upon it. Also very accurate ammunition would be used, of full charges.

I have a .30-caliber Springfield rifle of National Match type which has been fired perhaps 3,000 rounds, with fairly good care in cleaning. Of late this rifle seems to have gone off its shooting; and not only this, but it doesn't seem to hold its zero nearly as well from one string to another or from day to day as it did formerly. The barrel is full of slight pits and shows signs of wear, but is bright throughout. The two screws that hold the stock and receiver together are kept very taut. Where would you suggest that I look for the trouble?

I am planning on disposing of this latter rifle and purchasing one or the other of rifles mentioned at the beginning of this letter.—G. W.

Answer (by Colonel Whelen). I might start to answer your questions by saying that I am the officer in charge of the Experimental Department at Springfield Armory, and also in charge of the targeting of all rifles; but yet I can not answer your

letter exactly, because individual rifles differ, and also individuals differ. Particularly, I think that much of the daily variation we see in centers of impact given by various rifles is due to variations in the way an individual aims and holds the rifle. I can, therefore, only answer your questions in a general way, based on observing thousands of rifles targeted at machine rest, and of shooting several hundred personally, many of them for a great many rounds.

National Match, sporting, and type T rifles are all targeted 100 per cent from the Woodworth cradle on our 200-meter underground range. During the past two years, National Match rifles have averaged about 2½-inch groups and sporting rifles about 2¼-inch groups of 5 shots each. Had these rifles been tested by firing 10-shot groups, the averages would have been about 3½ and 3¼ inches, respectively; and it is these figures which should be compared with the groups averaged by the type T rifles. The type T rifles are targeted by firing 10-shot groups, not 5-shot groups, and these 10-shot groups average about 2¼ inches, measuring from center to center of bullet holes farthest apart. Therefore, the type T rifles are very measurably more accurate than the others. All the above targeting is done with National Match ammunition.

Now, we come to statements which I must make very general, because individuals and rifles differ. Generally speaking, other things being equal, the heavier the barrel of a rifle is, the more accurate will it be, the better will it maintain its zero, and the more nearly constant will be the location of its center of impact from day to day. The National Match and Service rifles have barrels of equal weight. In fact, the National Match barrel is nothing but a Service barrel selected by visual inspection and star-gauging, and proved in its accuracy by targeting. The sporting-type barrel is quite a little heavier than these, and, of course, the type T barrel is very much heavier than either; in fact, about 3½ pounds heavier than the sporting-type barrel. This accounts for the difference in average accuracy as set down above.

I do not believe we can make any reliable statements as to the maintenance of a constant center of impact of groups fired from the above three classes of rifles when the shooting is done with iron sights, because so many factors enter. For example, we know that the way a man aims differs from day to day, and indeed differs even while firing a string of 20 to 30 shots. We know, for instance, that in small-bore rifle-shooting the center of impact with iron sights may shift considerably during the first 10 shots, and thus in the Dewar Match the contestants usually fire 10 shots or more on a practice target, and get their center of impact reliably settled down in the center of the 10-ring before they turn on their record target. It is also well known to all experienced riflemen that light on iron sights causes a shift in center of impact. Thus, the difference between cloudy light and the sun coming out from under the cloud and illuminating the sights may cause a change of an inch or two per 100 yards of range.

The most reliable indication we get on change in center of impact is with rifles equipped with telescope sights, for here the aim is always constant. I have shot a great many of all three types of rifles equipped with telescope sights, and personally own a number of each type so equipped. My shooting has almost all been done at 100 yards from muzzle and elbow rest, and shooting once a week, or perhaps once every two weeks. Also, I have kept very close track of sight adjustment and location of center of impact with respect to point of aim. In fact, these records have been entered most carefully on the cards on which I keep the record of each rifle. The following examples are given for my testing distance of 100 yards, and will, of course, be almost exactly double the amount for 200 yards, or five times the amount for 500 yards.

The location of centers of impact differs from day to day either or both horizontally and vertically. With National Match rifles, the variation may be as much as 2½ inches, and while a single 10-shot group will average about 2 inches (this is not machine-rest shooting, remember), a composite group of ten 10-shot groups fired on different days with same sight adjustment would run about 4¼ inches. With the sporting rifle, the variation will not often exceed 1¼ inches—a single 10-shot group will average about 1¼ inches, and the

composite 100-shot group will probably run about 3½ inches. With the type T rifle, these figures will be about ¾ inch, 1½ inches, and 2½ inches.

Furthermore, there will be a very great variation in any rifle during the first 10 or 15 shots while the barrel and receiver are being driven back in recoil to a constant position or bed in the stock. Riflemen seldom see this unless they change their stock, because it occurs while the rifle is being targeted at the Armory. There will be another constant slight change during the first 100 rounds or so while the barrel is losing its machine polish and taking on its bullet polish. Then the barrel should remain very constant probably for 3,000 to 4,000 rounds, presuming that it is perfectly cared for. After that, we begin to notice slight variation, due to erosion and frictional wear, although some barrels go as much as 6,000 to 7,000 rounds before any falling off in accuracy is noticeable.

A very considerable variation in accuracy, zero, and location in center of impact may come at any time due to a disturbance of the proper bedding of the barrel and receiver in the stock, usually due to warping, or to loose guard screws. This can always be corrected by rebedding or restocking, but it really requires the services of an expert to do it. We frequently see a rifle give 6- to 8-inch groups at 200 meters, because it is in a stock in which it will not bed correctly, when bedding it in a proper stock will reduce the group to the small average of 2½ inches or so. The lighter the barrel, the more it is influenced by poor bedding.

In the case of your present rifle, I can not state for certain what is the cause of the inaccuracy. I suspect it is due largely to the rough bore. It may be also that the stock has warped slightly. Part of it may also be psychological—that is to say, you may think it is worn out, and, hence, may think it is worse than it really is, due to your lack of confidence in it and the natural tendency to blame offshots on the rifle rather than on yourself. We all do this. I have no doubt that I have discarded many barrels long before they were worn out, just because I thought they might be worn out, and at once lost confidence in them.

Lastly, may I state that the type T rifle is really entirely too heavy for any use off the target range.

ON RELOADING FOR THE .45 AUTO.

I would appreciate your giving me a little information regarding the reloading of the .45 A. C. P. cartridge. I have been doing some loading recently with this cartridge, using a lead bullet designed for the .45 Colt, but with hollow base, the bullet weighing approximately 220 grains. This bullet with 4½ grains of No. 5 is very pleasant to shoot and develops sufficient pressure to operate the mechanism of the .45 Auto. In loading the bullet I have been resizing the case full length and not resizing or expanding the neck. What I wish to know, is it desirable to resize and expand the case neck in addition to full-length resizing? Also, what about crimp? I have been using no crimp and shooting the cartridge in both the .45 Auto. and the 1917 Colt. Any information you may give me along this line will be appreciated.

Another matter upon which I would like your advice is that of building up a library. The only book on the pistol I have is your "Pistols and Revolvers." I would like to add another. Himmelwright's book, I notice, is now out in a new edi-

tion. What is your frank opinion of the book? I have read his other book, the one selling for about \$1, and there are quite a few things in the book which appear to be contrary to my experience.—E. B. H.

Answer (by Major Hatcher). In reloading for the .45 Automatic it is necessary to resize full length, because the chamber of the pistol is cut out a little at the bottom and the cartridge cases swell a little at that point. For use in the 1917 revolver it is usually not necessary to resize full length.

If your bullets fit tight in the neck of the cartridge, it is not necessary to resize the neck and then expand it. The object of doing that is to make the bullets a correct fit.

The proper way to load the .45 Automatic is to have the bullet a tight enough fit in the neck of the case so that no crimp is necessary.

Himmelwright's new book on pistols and revolvers is very fine, and I do not believe that anyone interested in the pistol-shooting game can afford to be without it, as it contains a world of information, and is especially complete in regard to loads.

SOME PROBLEMS OF A SCATTER-GUNNER

For several years I have been shooting over the traps considerably and always used a pump gun, either Savage or Winchester of standard grade, with ribbed barrel, or of trap grade, and ran an average of about 95 per cent. About 18 months ago I purchased a new L. C. Smith Specialty, single trigger, regular trap grade, valued at \$200, and started to shoot with a double gun. The troubles began immediately, and I have never been able to do as well with the pumps, sometimes dropping as low as 75 per cent.

Careful measurements were made and the gun sent to the factory and restocked to order, but still the trouble exists. Another point may be considered. Only during the past year I have been forced to use glasses for reading, but seem to see as well as ever on the ranges.

Can you give me any information or instructions that will help improve the shooting? The ones missed most frequently are straight aways. The gun shoots a little low but makes a beautiful pattern, having run as high as 96 per cent patterns with the new Western Super trap loads, but shoots about 80 to 85 per cent patterns with the ordinary trap loads of any standard ammunition.

Do you think I should try to have shooting glasses fitted, or should I wait until the change of eyesight is fully completed?—C. F. H.

Answer (by Captain Askins). The whole trouble apparently comes from that Smith gun shooting low. You can't do anything with such a gun, and I doubt if you can remedy it, either, with a straighter stock. There is a certain amount of psychology in shooting a gun, and if you begin missing with a certain arm, the idea that you may miss even on a good hold will always stick. I have reached a point where if I cannot shoot a gun well right in the jump off, I set it aside to loan to people or to sell to somebody that can shoot it. Generally my misses come from shooting low, and have gotten so that I can't shoot standard stocks, and have to take trap stocks with about two-inch drop. This in my case is partly eyes. In order to keep the target clearly in sight, I do not dare to shade it by

the barrels coming too close, as in nearly covering. The target is instinctively kept above the barrel; and the fact that I know better than to do this with some guns, doesn't help any when it comes to shooting, because, for the instant, I forget, and pull just as I am accustomed to pulling with a straight stocked gun. I tried a compensated Winchester not long ago, and missed eleven straight, when I quit. Even when I consciously tried to hold high it didn't do any good.

As between a double barrel and a pump gun, the pump has the grip of the left hand a greater distance beneath the line of aim. This furthers a higher elevation for the pump. In a general way I have been telling people that when they have been brought up with a pump, and have learned to shoot with it, stick to the pump; the change to a double will throw them off. Even if a beaver-tail fore-end is placed on the double, some difference will remain.

Another thing that is wrong with that Smith is that it is shooting too close for trap work. A percentage of 65 would be much better and result in a greater number of broken birds. Keep that Smith double for ducks. Ought to be a fine duck gun.

THE MODEL 1917 RIFLE—NEW BARREL FOR KRAG

Would like your opinion as to the merits of the U. S. Model 1917 (Enfield) as a target rifle. Would it be possible to equip this rifle with Lyman sights? I like the balance and longer barrel of the M1917 better than I do that of the "as issued" M1903-06. Are the barrels of these rifles chambered and rifled as accurately as the barrels of the .30-06?

I am a great admirer of the actions of the model of 1898 (Krag) rifle. These actions seem to work easier and smoother than any bolt actions that I have ever tried, and it seems to me that one can smooth up the trigger pull on the M1898 much easier than on other actions. Would it be worth while, in your opinion, to have a barrel chambered for the 180-grain pointed bullet, and mounted on a Krag action? The gun would be properly stocked and fitted with Lyman sights. I have a 30-inch barrel in mind. Would the 10-inch twist as in the Krag barrel be O.K. for the 180-grain bullet?—E. P. H.

Answer (by Colonel Whelen). I am enclosing a reprint which pretty thoroughly describes the Model 1917 rifle in comparison with the 1903. To do good work with the Model 1917, it should really be taken to a gunsmith, and he should be asked to mill off the guards for the rear sight, to fit a Lyman No. 48 rear sight, and to fit a piece of walnut to the stock so as to raise the comb and bring it forward, so that the point of the cocking piece just misses the point of the comb when the bolt is opened. Then the rifle can be shot without great errors of aim, and it can be held and aimed steadily, and the only difference between it and the Springfield will be the very slight difference in accuracy of the barrel, which does not amount to much.

The Krag rifle is the easiest working of any bolt action, and I believe that a good Krag action is well worth a fine barrel and a fine stock. The Niedner Rifle Corporation, Dowagiac, Mich., can furnish you with a new barrel for the Krag, chambered for the Springfield pointed bullets, at a cost of about \$30.00, and the new Krag ammunition with pointed bullets will shoot just as accurately in this as the Springfield shoots with its ammunition.

A PROBLEM IN TRAJECTORY

SEVERAL ex-Army men and myself had an argument which we would like to have you settle for us.

These men claim they were taught in the Army that a .30-caliber bullet when fired from a rifle will immediately begin to rise until it has reached 500 yards, when it is 2 feet above the level from which it was fired and then begins to drop; also that it will travel 2 inches to the left at 200 yards; but when it has traveled 500 yards will be 5 inches to the right. One C. A. C. man says a 2-inch projectile will behave in a similar manner. I tried to convince them that any projectile will begin to drop as soon as it has left the rifle and at no time will be above the level from which it was fired, and that any deviation from its course will be in one direction only, due to rifling and windage.

Will you please settle this for us in such language that they will understand?—A. A. R.

Answer (by Colonel Whelen). Due to the force of gravity, a rifle bullet starts to drop to the earth just as soon as it leaves the support of the rifle barrel, but it is also traveling forward very much faster than it is dropping. Likened its flight to that of a baseball. If you want to throw from second base to home, you don't throw directly at the catcher—your ball would soon fall to the ground. You actually throw it toward a point far above the catcher's head; it first rises to a point halfway to the catcher, then descends to the catcher, traveling in a curve which is called the trajectory.

Similarly, with a rifle bullet. If you want to hit an object 500 yards away, you have to start the bullet off at an upward angle. This you do by raising the rear sight; then when you aim, the barrel is really inclined upward. If a Springfield rifle is sighted for and fired at a target 500 yards off, the bullet starts out at an upward angle, and continues to rise above the line of aim until it has flown about 275 yards, where it would be flying about 2 feet high; then it starts to descend until it strikes the point of aim at 500 yards. If you aligned the bore exactly on a target 200 yards away, you would not be making any allowance for the distance, and the bullet, starting to drop as soon as it left the muzzle, would drop about 10 inches in the .2 second it took it to fly 200 yards, and would, therefore, strike about 10 inches below the bull's-eye. Similarly, if we let a bullet drop from our fingers, it would drop about 10 inches in .2 second. To hit a target 200 yards away, we must incline our rifle barrel upward by raising the rear sight and aiming so that the bore really points at a point 10 inches above the bull's-eye. All this is basic.

The Springfield rifle has a right-hand twist, and the drift proper is, therefore, to the right. There is, however, a slight lateral jump to the left, and the total horizontal deviation of the bullet, excluding wind, is the algebraic sum of the drift and the lateral jump. On account of this slight lateral jump the trajectory is found to be very slightly to the left of the central or uncorrected line of sight up to a range of 500 yards, and beyond that range to the right of that line. In order to minimize the deviations at the most important ranges, the drift slot on the sight leaf is so cut as to make the trajectory cross the adjusted line of sight at a range of 500 yards. The deviation under these conditions starts out to the left, and reaches its left maximum at 300 yards, where it is only .45 inch. At 500 yards, there is no deviation, but beyond 500 yards the true drift begins to show itself, being 2.6 inches

to the right at 800 yards, and 6.3 inches to the right at 1,000 yards. These deviations are so small that they are of no consequence, and no well-informed rifleman gives any heed to drift.

WAD-CUTTER BULLETS AND REDUCED LOADS IN THE .45 NEW SERVICE

I RECENTLY purchased a .45-caliber New Service target, and I am trying to work out a reduced load for it for practice.

Can you suggest a wad-cutter bullet and load for me that is accurate up to 50 yards? I have been unable to find anything so far. I imagine the large powder capacity is a hindrance to the proper ignition of a small powder charge. I can shoot consistently in the 90's on the standard American at 20 yards with old black-powder Winchester loads; but I like to shoot 200 or 300 rounds when I go out, and the recoil is very severe if I shoot that many.

Would you advise me changing to a .44 special cartridge?—B. H. J.

Answer (by Major Hatcher). When it comes to wad-cutter bullets in the .45, the choice is limited to Belding & Mull No. 454210, which weighs about 200 grains, Bond No. B-454510, which weighs 190 grains, B-454675, which weighs 255 grains, and C-454760, which weighs 235 grains.

Perhaps the best one of these for a reduced load is No. B-454510. A very good load for this 190-grain bullet is 4 9-10 grains of du Pont pistol powder No. 5.

The Bond-Ness wad-cutter No. C-454760 requires a load of about 5 grains of pistol powder No. 5 and gives very good results. For full powder load, you can use 7½ grains of du Pont pistol powder No. 5 with nearly 1,000 foot-seconds velocity.

I do not believe it is necessary to change to a .44 Special.

GET THE .44 SPECIAL

I WISH you would be so kind as to help me decide on a powerful and accurate handgun, to be used on everything from tin cans to black bears.

How do the Colt .44-40, .45, and the S. & W. .44 Special compare, as to accuracy, shock power, etc.? In the .44 Special caliber, how does the Colt New Service revolver compare with the S. & W. .44 Military, as to accuracy, strength, and durability? Does the greater weight of the Colt make aiming more difficult?—D. S. D.

Answer (by Major Hatcher). If you want the greatest accuracy in a large-caliber revolver, get the .44 Special; but if you want the utmost in stopping power against heavy animals, get the .44-40.

Personally, I believe that I should get the .44 Special anyway, as all three of these are very heavy guns and there is little to choose in stopping power, whereas the .44 Special is considerably more accurate.

In this caliber, the best gun to get is the Colt New Service. It is equally as accurate as the Smith & Wesson, but in my opinion is more durable.

AUXILIARY BARRELS AND PISTOL HOLSTERS

IN AN earlier issue of the RIFLEMAN you mentioned the auxiliary barrel for the .45 A. C. P. What company besides the two mentioned handle them? Are they satisfactory? How is their accuracy? Are they made for short- or long-rifle cartridges? Who puts out good shoulder holsters for quick drawing? How is Captain Hardy's anti-bandit holster?—W. S.

Answer (by Major Hatcher). The auxiliary barrel for the .45 is made by R. F. Sedgley, Inc., 2316 North 16th Street, Philadelphia, Pa. These barrels are very satisfactory. They handle only long-rifle cartridges. Captain Hardy's holster is very good. A good shoulder holster for revolvers is made by Edward K. Tryon & Co., 910 Chestnut Street, Philadelphia, Pa.

REBARRELING THE 7.62 RUSSIAN FOR THE .30-40 Krag CARTRIDGE

IF I HAVE a Krag barrel fitted to my 7.62 mm. Russian action, which action is good for 50,000 pounds breech pressure, would the .30-40 case (good case) stand that much pressure? What do you think of the idea? My 7.62 is accurate enough, 2-inch and less, groups at 100 yards being the rule with .303 British 172 grain, Western Tool and Copper Co. bullets, diameter .3129 inch, and 35 grains of HiVel; but you know it's rather inconvenient to have to confine one's self to one special bullet all the time. If I can use that Krag barrel on my Russian action, have about ¼-inch cut-off breech and re-chambered to eliminate that long throat (Elliott Bros. will do it), I can then use any old .30-caliber bullet that happens to be handy to get, and have an action to stand more pressure; I can get higher velocity and flatter trajectory, so necessary for long shots at coyotes here.—J. B. H.

P. S.—Turkeys were won with the Russian rifle against Springfield N. M. rifles.

Answer (by Colonel Whelen). I know of several riflemen who have had Krag barrels fitted to the 7.62-mm. Russian action. I have not seen any of these, but I think that the action will handle the cartridge all right, and it is amply powerful enough for a 50,000-pounds breech pressure. I think it should prove a very good action for the Krag cartridge, and I should say the idea was entirely all right.

The cartridge cases themselves, however, will not stand 50,000 pounds. About 45,000 is the limit, and this will be reached by using charges about 1½ grains heavier than the maximum charges given in the "Ideal Handbook." Really, I think it would be better to just go ahead and use the maximum charges given and not try to increase. Then, you would always be absolutely safe.

WANTS A SHOOTING COAT

I AM WRITING to you for information as to where I can get a ready-made shooting jacket or coat with padded elbows for rifle-shooting. My sporting-goods dealer has failed to find a firm that has them. Any information will be greatly appreciated.—R. D. G.

Answer (by Colonel Whelen). The G. R. C. Garment Co., Box 216, Olean, N. Y., is the only maker of ready-made shooting jackets that I know of. These are made of a very good grade of olive-drab khaki material with elbows and shooting shoulder (right or left), correctly padded with sheepskin with the fleece inside. The middle of the back is slit so that the coat does not bind under the arms and across the back when one assumes the prone or sitting positions. There is nothing fancy about the coat, but it is well made and durable, the padding is just right, the neck is entirely free, it is cool, it prevents one getting all dirty on the firing point, and it is easy to shake or brush the coat free from dirt. One might also say that the coat can be put in the dope bag when not in use. The makers will send you a small circular describing it on request. The price is very reasonable, and I recommend it highly.

THAT SMALL-GAME EXPRESS RIFLE

I AM INTERESTED in building a small-game Express rifle chambered for the .22 W. C. F. cartridge as described by Capt. G. L. Wotkyns in the June number of the RIFLEMAN. A friend of mine has an old Winchester target rifle with heavy barrel, target butt plate, etc., which is chambered for the .25 S. S. cartridge, and the barrel is spoiled from neglect. I am considering buying this gun from him to get the action, and then having the Winchester people make me up a new barrel chambered for the .22 W. C. F. cartridge.

Do you consider this action strong enough to stand the pressures generated by the load used by Captain Wotkyns—namely, 12 grains of du Pont No. 1204? Should I have the barrel rifled by the Winchester people and chambered by some private gunsmith? And, lastly, what weight barrel, length, etc., would you advise? I want to use the gun for small-game shooting more than target work, but would not expect to carry it around much.—W. T. S.

Answer (by Colonel Whelen). Rifles for the new .22 W. C. F. cartridge must be bored and rifled for the .22 long-rifle cartridge, and must have a high-power stainless-steel barrel. By far the cheapest and best way to plan such a rifle is to obtain a .22-caliber Springfield rifle (which has such a barrel and costs \$46) and send it to Griffin & Hobbs, 202 E. 44th Street, New York, N. Y., and they will rechamber it and alter the bolt for \$15. It should be equipped with a Lyman telescope sight. With proper ammunition, it should give 2-inch groups at 100 and 4-inch groups at 200 yards.

The load should be the small Winchester or Remington noncorrosive primer, 11 grains of du Pont No. 1204 powder (12 grains is an excessive charge), and the 5.5-mm. Velo Dog bullet. Case necks should be resized down about 3/16 inch to hold the bullet friction tight without crimp. Noncorrosive primers must be used, as the older primers will ruin the bore in short order. Muzzle velocity, 2,415 f. s. Sighted in to strike the point of aim at 100 yards, the bullet will drop 11 inches low at 200 yards. The rifle and cartridge are excellent for woodchucks, crows, and hawks.

The Winchester single-shot action would also be excellent for this cartridge; but I doubt if you can induce the Winchester Repeating Arms Co. to make and fit a nickel-steel barrel to this action, and anyhow most Winchester barrels are bored and rifled rather small. The groove diameter for this cartridge should not be less than .2235 inch. You would probably have to go to the Niedner Rifle Corporation for the barrel, and pay about \$30 for it; and then before you could hold the rifle really steady and aim accurately, particularly with a telescope sight, you would be obliged to make a modern stock for the rifle. I think that the most satisfactory and cheapest plan is that first described. In any case, the barrel should be at least 24 inches long, and should not be lighter than 1.12 inches at the breech and .63 inch at the muzzle (.22-caliber Springfield dimensions). I can highly recommend the Springfield rifle altered by Griffin & Hobbs. They have not as yet worked out a magazine for this rifle, but expect to be successful at this shortly. At present, the rifle must be used as a single-shot. The .22-caliber Springfield, of course, comes with the barrel and receiver drilled and tapped for Lyman telescope sight blocks.

DOPE BAG CORRESPONDENTS PLEASE NOTE

DURING the three-week period of the National Matches Mr. Ness will be at Camp Perry. There will, therefore, be a delay in answering some of the Dope Bag letters until Mr. Ness is back on the job again in Washington. Colonel Whelen will handle as much of the work as he can, but some of it will probably have to wait; and we ask our readers to be as patient as possible until Mr. Ness gets back and has had time to get caught up with his work.—THE EDITOR.

OUR READERS CAN HELP—

By SENDING us a few particularly good photographs suitable for cover illustrations. We desire principally pictures of outdoor hunting scenes, although an occasional rifle-range scene of unusual interest and activity can be used. Hunting pictures can cover a wide range of subject, including squirrel, woodchuck, coyote, and other small-game and varmint-hunting activities. These latter have been somewhat difficult to obtain, in the past, and we hope you will send us some of them.

One requirement is that a rifle appear somewhere in each picture; and, of course, pictures of really beautiful outdoor scenes are preferable to those lacking such beauty. Credit will be given for each picture when it is published.

One word of caution: Experience has repeatedly shown that our readers are very loyal and generous. A call of this kind is, therefore, quite apt to result in a perfect deluge of pictures. So those of you who have pictures to spare, please send only such as you consider unusually good, and which can readily be cut so as to fit our cover mortise when enlarged. It would add interest if a few notes could be given on the back of each picture, telling where it was taken, the occasion, etc. Pictures do not necessarily have to be large—any good, clear, snapshot will do; but the larger they are the clearer they are apt to be when printed.

THE EDITOR.

THAT "SMALL-GAME EXPRESS RIFLE"

CAPT. G. L. WOTKYNs, whose article, "A Small-Game Express Rifle," was published in our June issue, advises us that he is receiving a great many letters from all over the country asking where such a rifle can be built. The Captain mentions the following gunsmithing concerns as being thoroughly conversant with this proposition, and well able to produce satisfactory rifles of this type:

Niedner Rifle Corporation,
Hoffman Arms Co.,
George Titherington,
Griffin & Hobbs, Inc. (formerly Griffin & Howe).

Captain Wotkyns requests that persons interested in the particular type of rifle in question communicate with any of the above concerns rather than with him.

THE EDITOR.

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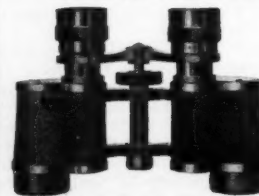
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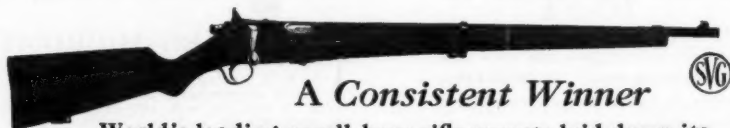
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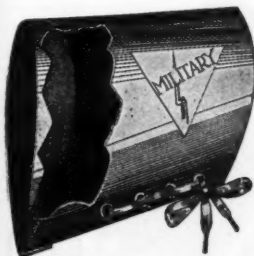


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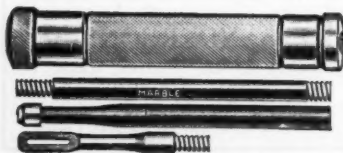
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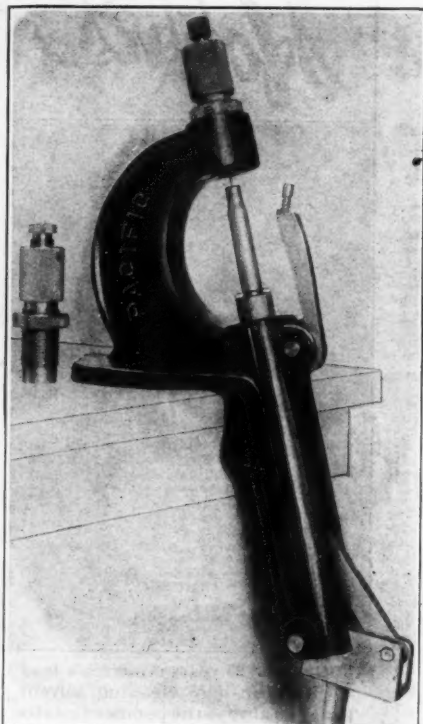
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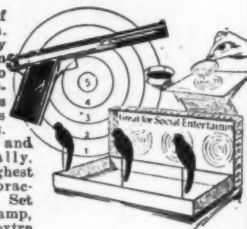
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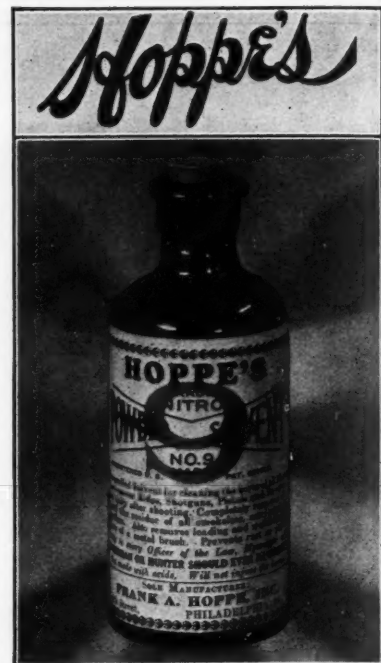
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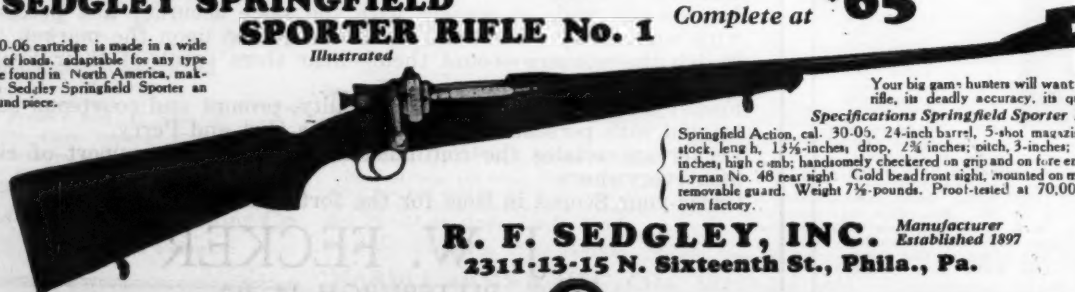
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.35 REMINGTON autoloading, new condition, stock scratched, Marble peep, Lyman front, \$45; Winchester .30-30 rifle, Lyman peep, full magazine, outside worn but rifle is accurate, \$18; Winchester .30-30 carbine, full magazine, Lyman peep, like new, \$25. W. T. Swift, Lake Placid, N. Y. 9-30

COMPLETE copies of the AMERICAN RIFLEMAN for 1928 and 1929, \$2.50 per year. Schmitt resins die and bullet seater, for caliber .25-20 for use in Schmitt No. 12 tool, cost \$7, \$5 for both. Newton rifle stock, oil finish, with butt plate and swivel screws, \$6.50. All delivered. C. B. Currey, P. O. Box 1041, Seattle, Wash. 9-30

.45 NEW SERVICE, brand new, 5 1/2-inch barrel, Heiser stamped holster, \$23.50; Colt .38 Official Police, 5-inch barrel, brand new, \$21.50; S. & W. M. & P. .38 caliber, 6-inch barrel, new condition, \$17; Colt .38-40, good 5 1/2-inch barrel, \$21.50; holsters or .45 auto., fine, \$65 each; new Heiser stamped holster for Officers' Model, 7 1/4-inch barrel, \$2.50; 1,500 .38 Colt smokeless cartridges, \$1.25 per 100; U. S. coats, new, size 40, 60 cents each. C. R. Jeffries, 137 Nevins St., Lancaster, Pa. 9-30

MAGAZINE RIFLES, over-and-under tarp-guns, double- and three-barrel shotguns. Catalogue gladly. Abesser & Merkel, gun-makers, Suhl, 66, Germany. 10-30

FOR SALE ONLY—Collection Model 1873 Winchester repeaters, never fired, factory grease, especially sighted at factory, special sights, one .44-40, one .32-40, both beautifully stocked and engraved, each \$40; also one .38-40 carbine and one .44-40 saddle gun, each \$25, or all four for \$125; also good Francotte 12 double, good gun, \$35; also beautiful Greener, 12 double, \$75; Colt double, engraved 12, two stocks, one trap one field, wonderful gun, perfect specimen, all three 28-inch barrels modified, and full, price, Colts \$60. Money back if not as specified. Clarence A. Marsh, Box 1093, Orlando, Fla. 9-30

ANTIQUES—Pistols, swords, rifles, daggers, war medals, Indian relics, curios. Lists free. Collectors' Exchange, 1536 Willington St., Philadelphia, Pa. 9-30

.22-CALIBER WINCHESTER, Model 57 rifle, in canvas case, like new, \$16. G. K. Halbasch, 1307 N. Dearborn St., Chicago, Ill. 9-30

WINCHESTER single-shot .25-20 S. S. on No. 1 action single-set, 28-inch octagon barrel, Niedner chamber, target sights, weight about 9 pounds, perfect inside and nearly so on outside, \$28; 30-inch No. 3, .38-55 barrel for Winchester S. S. action, perfect, \$10; factory-loaded smokeless cartridges, .45 Colt, \$2 per 100—38 Long Colt, \$1.50 per 100. W. H. Janssen, Nokomis, Ill. 9-30

EXCELLENT REMINGTON cap-and-ball revolver, \$6; .40-70 Ballard, 40-90 Ballard, and 40-90 S. S. cases, W. R. A. Co., .38-72, .38-90, and many other moulds and tools. J. V. K. Wagar, Woodland Park, Colo. 9-30

.32-40 BALLARD-WINCHESTER, two .22 Ballards S. A. A. .44 Special, 7 1/4-inch O. M., .38 Special 6-inch, 405 Winchester. Trade for Winchester 52 or M1, .22 Guns. Price to sell. All letters answered. C. Harry Davison, Box 76, New Franklin, Mo. 9-30

SLIGHTLY SHOP-WORN NIGHTHAWK prism binoculars, 7 x 24, 1-year guarantee, only \$29.75 cash, money order, or certified check. Other binoculars and rifle scopes \$5 to \$75. Vernon Optical Company, Box 14, Mount Vernon, N. Y. 9-30

.45 COLT AUTO., \$22.50; .38 Colt Military, \$20; .22 Colt Woodman, \$20; 9-mm. 4-inch Luger, \$20. All like new. J. A. Carlson, Arthur, Iowa. 9-30

OPTICAL AIRPLANE machine-gun sights, Air Service surplus, new in original cases, 5 ground lenses, size 2 x 24, cost over \$50, \$4 postpaid, money order, or cash. Western Salvage Co., 648 Market, San Diego, Calif. 9-30

RIFLE BARGAINS—22 target single-shot rifle, 27 1/2-inch tapered octagon barrel, Hopkins & Allen, by Mervin Hulbert, action Winchester prewar lever, bore perfect, \$15; Winchester musket, 22 long rifle, scope mount, windage rear sight, \$15; Marlin .32-40 repeater, box cartridges, \$15; Winchester .25-35 repeater, box cartridges, \$15; Winchester 1876 40-60, box cartridges, \$15; 50-caliber Spencer repeater, made by Burnside Rifle Co., Model 1863, fine, 2 boxes cartridges, \$15; 30-40 Springfield Sporter, pistol grip, box cartridges, \$15. Mail money. Satisfaction guaranteed. N. P. Fraysteth, Milan, Minn. 9-30

BARREL AND CYLINDER for .45 S. & W. 1917; also cylinder for shooting .45 auto. ammunition in .45 S. & W. Ray Welker, 406 N. Harvey, Oak Park, Ill. 9-30

WINCHESTER trap grade self-loading .12-28, full, matted barrel, Silvers pad, cost \$103, sell \$45; Winchester .16-28 full, takedown, 1897, \$25; Le-fever prewar Damascus double hammerless, auto. ejectors, fine, \$55; fancy Scott 10-gauge hammer gun, \$125; 10-gauge Charles Daly double hammerless, \$150; Hopkins & Allen .12-30 hammerless, \$15. Mail money. Satisfaction guaranteed. N. P. Fraysteth, Milan, Minn. 9-30

SHARPS .45 long-range match rifle, very high grade and perfect, splendid piece, \$30; also Ithaca 12-gauge 24-inch barrels, brush gun, \$125 grade, new condition, a beauty, \$35. Nice old F. G. Harris superposed hunting rifle, \$15. J. G. Dillin, Media, Pa. 9-30

COLT REPEATING RIFLE .44-40 caliber, perfect condition, rare value, \$18; Smith & Wesson .45 Schofield model, fair condition, bargain, \$12. Write for used gun list. Hudson, R52 Warren St., New York, N. Y. 9-30

IMPORTED soft-nose cartridges, 7-mm. Mauser and 5-mm. Mannlicher-Schoenauer, at \$6 per 100 while they last. Paul Ochsle, Jefferson City, Mo. 9-30

400 .45 AUTOMATIC CARTRIDGES, \$8; 350 .30 Springfield cartridges, \$7; both lots good. J. Davis, Box 87, Media, Pa. 9-30

WINCHESTER .54, 30-06, Lyman 48 sight, oil-finished stock, perfect inside and out, only fired 60 times, \$55. Jack Woodruff, 5047 West 21st St., Los Angeles, Calif. 9-30

CASHMERE 12-gauge ejector, Whitworth barrels, side lug bolting system, best bolted gun made, finely finished, new. J. S. Ovington, Marion, Iowa. 9-30

ROYAL, Remington, and Underwood typewriters, \$15 each; new .22 H. P. Savage and leather case, \$25; .45 auto. ammunition, \$2 per 100. Box 3542, Station P, Jacksonville, Fla. 9-30

SHARPS BUFFALO RIFLE, weighs 18 1/2 pounds, .40 caliber, perfect inside, octagon barrel, fine shooting shape, \$30; Colt .38 D. A., light-weight revolver, 5-inch barrel, new condition, \$15; Colt .45 D. A. Frontier revolver, 6-inch barrel, good condition, \$15; A. Waters flintlock pistol, stamped 1841, very good, \$15; S. North U. S. flintlock pistol, full stock, stamped 1821, very fine, \$20; flintlock Kentucky, full-stock rifle, 43-inch octagon barrel, brass-trimmed, fine brass patch box, good specimen, \$35; half-stock Kentucky percussion target rifle, fine condition, target sights, octagon barrel, 40 caliber, \$20; Ballard Pacific target rifle, octagon barrel, weight 12 pounds, perfect condition, .40-63 caliber, \$25 Kentucky percussion over-and-under rifle and shotgun, 24-inch round barrels, very good condition, \$18.50; J. H. Hall percussion 1847 rifle carbine, brand new, never been fired, rare gun, \$15; Sharps hammerless Borchardt rifle, .38-55, brand new barrel by Peterson, no sights, never fired, perfect, \$25; Starr Civil War percussion carbine, fine, \$5; Remington rolling-block heavy buffalo rifle, octagon barrel, .45-70 caliber, weight 12 pounds, \$15; rare 6-shot revolving Whittier percussion rifle, poor condition but very rare, \$10; Winchester 76, model 40-65, good condition, \$8; heavy English blunderbuss flintlock, 24-inch barrel, 2 1/2-inch bell mouth, heavy iron barrel, very fine condition, \$22.50; very fine Spanish double-barrel, 16-gauge flintlock shotgun, profusely carved, some fine inlay and engraving, beautiful gun, in fine condition, \$35; Remington 12-gauge automatic shotgun, 32-inch full-choke barrel, finely checkered, perfect condition, \$35; Colt Frontier .32-20 revolver, 6-inch barrel, good, \$15; 45-caliber automatic, commercial grade, practically new, \$20; 12-gauge German bolt-action shotgun, 2-shot, fine condition, \$15; all-metal, 50-caliber cane gun, fine piece, \$10. Money order with order; buyer pays express; 3 days for examination of guns or return. M. C. Clark, 1819 S. Figueroa St., Los Angeles, Calif. 9-30

BRAND NEW, in factory box, S. & W. Military model revolver, caliber .44 Special, 6 1/4-inch barrel, fixed Patridge sight, newest type with monogram on handle, \$28; used but like new, one New Service Colt revolver, caliber .44, special 7 1/2-inch barrel, military sight, \$20. K. T. Gan, 5739 Drexel Ave., Chicago, Ill. 9-30

REISING PISTOLS—One absolutely perfect, spotless inside and out, gun-crank condition, extra magazine, a bargain at \$30; another in good condition, perfect barrel and action, grip slightly cracked, \$25. Send money order. No trades. Milford Baker, 609 Atlantic Bldg., Philadelphia, Pa. 9-30

.38 SMITH & WESSON, pearl handles, fine condition, \$12.50. WANT—Springfield rifle, .45 Colt automatic, also following cartridges: .30-06, .30-40 Krag, 7.62 Russian, and .303 British. D. O. Amstutz, Ransom, Kans. 9-30

OFFICERS' MODEL .38, extra pearl grips, gold bead sight, Heiser belt holster, 150 cartridges, nearly new, \$38; .44 Colt C. & B. outfit, \$10; DWM .30 Luger, \$16; Krag carbine, Pacific rear bore, perfect, \$15. Sell only. R. E. Quigley, c/o Tribune, Medina, N. Y. 9-30

.22 WEBLEY AIR PISTOL, Mark II, extra .177 barrel, pellets, cost \$25, sell \$15. Walter Simon, 206 Capitol Annex, Madison, Wis. 9-30

CHRIS SCHILLING 8-mm. SPORTER, 40 cartridges, extra clips, barrel rough but accurate, \$20; .32-20 S. & W. revolver, 5-inch, reblued, spring shoulder holster, \$20; S. & W. .22-32 target, holster, perfect, slightly holster worn. Call front sight, \$25. Transportation extra. J. F. Brandt, 407 Third Ave., Asbury Park, N. J. 9-30

COLT .22 Police Positive Target, perfect, \$20. Money order. WANT—Faibanks scale No. 3054. Walter F. Simon, 206 Capitol Annex, Madison, Wis. 9-30

SPRINGFIELD, .22 caliber, has Lyman aperture-post front sight, small pit 8 inches from muzzle, finish somewhat worn, mechanically perfect. Am asking \$32. Everett Swift, West Falmouth, Mass. 9-30

18 x 56 BUSCH BINOCULARS, \$75; 7X Mirakel, \$26; 10X DuMaurier, \$18.50; 45X Vion telescope, \$18. All fine condition with cases. 10X Megaphones, \$17; 6XEE, \$7.50; 5A, \$25; New 24 x 56 Bush scopes, \$40; 18 x 56 Bush, \$51. Will trade. Fred Johnson, Seneca, Ill. 9-30

.38-40 SINGLE ACTION, A1, \$20; .22 W. R. F. Colt P. P. target, perfect, \$20; both with good lined holsters. W. NT—S. & W. 17 or .38 Special, same condition. J. Pohlod, Jr., 9624 Silk Ave., Cleveland, Ohio. 9-30

CARL ZEISS 18 x 50 prismatic spotting scope, will show .22-caliber bullet holes at 100 yards when others fail, \$57.50; Trade-ins allowed. Fred Johnson, Seneca, Ill. 9-30

NEW AND USED rifles, revolvers, shotguns, loading tools, du Pont powders, primers. R. J. Gates, Mount Alton, Pa. 9-30

GUNSTOCK BLANKS: Our beautiful "Tiger Flame" maple and walnut, "Tough as hickory and hard as nails," cut "The Better Blanks." Stock-making instructions free. Descriptive treatise: "Gunstock Blanks of Flaming Beauty" for stamps. BELL, "The Gunman," Lewistown, Pa. 9-30

A GRADE FOX, double hammerless shotgun, 12-gauge, 30-inch barrels, special hand-rubbed, oil finished, figured-walnut stock with recoil pad, a beautiful virtually new gun. Price, case included, \$48. High-powered field glass and case, \$12. Burt Richards, Rockport, Me. 9-30

BELL'S "BETTER GUNSTOCK BLANKS": Shorter, \$2; Longer, \$3; in best plain, dense Pennsylvania walnut more than five years, seasoned "BONE DRY." Will trade blanks on modern and old-time arms. BELL, "The Gunman," Lewistown, Pa. 9-30

SUPER .38 auto. Colt in absolutely new condition, special adjustable sights by King, wonderful bargain at \$25. J. H. Atkins, Jr., Box 1025, Greensboro, N. C. 9-30

BRITISH ROSS .303, good condition, box non-corrosive ammunition, \$10 and postage. Bergsten, 3236 22nd Ave. South, Minneapolis, Minn. 9-30

LYMAN .438 field scope, complete, new, \$14; Winchester musket, .22 short, case and sling, fine, \$5. T. H. Leshner, 214 Horton St., Wilkes-Barre, Pa. 9-30

GUNSTOCK BLANKS—Plain \$1, fancy \$2.50, extra \$5; Sporters \$1.50, \$3.50, and \$6. C. T. Harner, 1600 Broadway, Springfield, Ohio. 10-30

M RLIN CARBINE '94, .32-20, new, \$15; Marlin hammerless, fancy engraved .12-28 full, equal new, \$45; Luger Parabellum prewar, 7.65-mm., good with stock, \$25; Bausch & Lomb 6 x 30 binoculars, \$15. Edward Mau, 300 Linden, Glenridge, N. J. 9-30

KRAG 30-40, new Springfield Sporter barrel, match chamber, short throat, cost \$62, take \$38; .22-caliber Niedner baby high-power on .25 Remington action, new, cost complete \$170, take \$125; Remington 20-gauge shotgun, full, 28-inch barrel, perfect, \$30; Ross .303 semi-sporter, 28-inch barrel, 50 Lyman receiver sight, \$9; Lyman No. 10 tool, special, cost \$10, take \$7; Lyman improved mould No. 311413, \$2. H. N. Bundy, R. F. D. No. 7, Topeka, Kans. 9-30

NIMROD GUN BLUE per pck. 75 cents postpaid; Pacific reloading tool for .30-06, .30-40, .45 Colt auto., or .38 S. & W. Special, complete including seating die, \$22.50 prepaid. Stamp for catalogue. W. Joseph O'Connor, 1517 First St., Baker, Oreg. 9-30

WINCHESTER .54, .270 caliber, Lyman-equipped, used condition, \$33; Remington 12-gauge autoloading Tournament, engraved, cost \$170, sell for \$80; Springfield National Match, oil-finished stock, checkered grip, forearm and bolt, sight protectors, sling, fine gun, only fired few times, \$40; walnut gunstock blank, pronounced curl, \$3; specimens native Montana o.e. showing fine gold, \$1 each. WANT—Cross fly rod. Frank Casey, State Capitol, Helena, Mont. 9-30

SELL OR TRADE

SEALED CASE .30-06 ammunition, \$15; new Mirakel binoculars, 7X, \$23. WANTED—.38 Colt automatic, pocket model; reasonable; no junk. Earle Adams, 1724 S. Ashland Ave., Chicago, Ill. 9-30

BUFFALO ROBE, \$20; mounted buffalo horns, \$5; or trade for good gun. C. Harner, 1609 Broadway, Springfield, Ohio. 9-30

L. C. SMITH single-trigger, 12-gauge ejector, double, two sets of barrels, 32-inch full, 28 improved cylinder, fine condition, \$50 cash, or will trade. Also a Winchester 20-gauge, Model 12, fine, \$30. Arthur W. Plumlee, Cambria, Ill. 9-30

NEW OFFICIAL POLICE .38 Special, 6-inch, \$23; trade for new Luger .30. Colt Frontier .45, perfect in, good out, hair trigger, \$18; Winchester 92 rifle .44, perfect in, good out, \$16. A. L. Woodman, 39 Elm, South, Brewer, Me. 9-30

MIRAKEL 8X Starlux prism binocular; or trade for Winchester or Fecker scope, perfect condition. Lawrence H. Lapinske, 726 Werle Ave., Wausau, Wis. 9-30

NEW ITHACA No. 1, 20-gauge, 28-inch, perfect, with trunk, \$40. Trade for Springfield N. R. A. Sporter, fine. Von Linden, Livingstonville, N. Y. 9-30

N.W. 25 .30-06 Niedner on Mauser, set trigger action for same, or similar on Springfield, or fine Springfield Sporter. F. M. Ferry, Cloverport, Ky. 9-30

PAIR DUELING PISTOLS, rifled barrels, engraved and gold inlaid, fine condition. C. E. Stodter, Army Recruiting Office, Buffalo, N. Y. 9-30

HAVE one 6 x 24 prism binocular. WANTED—A straight-line reloading tool, complete, with or without components, for .30-40 Krag, or \$20. B. Mecklenburg, Box 14, Mount Vernon, N. Y. 9-30

SAVAGE PUMP, fine, \$25; brand-new Savage 25-20, special grade and case, \$25; fine Kentucky rifle, horn and moulds, \$30; new Mauser, 8-mm. action, 98 model, very accurate, \$12. WANTED—.16 and 20 Winchester. Jim Frakes, Amsterdam, Mo. 9-30

TWO UNUSUAL GUNS—S. & W. Military in .44-40 caliber; Winchester 40.72 on 1895 model frame. WANTED—.20 Remington auto. Ray Welker, 406 N. Harvey, Oak Park, Ill. 9-30

\$60 AIRRAFT RUBBER BOAT, ideal for fishing and hunting, for star-gauged Springfield Sporter in excellent condition. Paul Oechale, Jefferson City, Mo. 9-30

BROWNING 16 auto., 30-06 Winchester No. 54, with Lyman 48W sight, 45 S. & W. 1917 with extra cylinder for .45 Colt cartridge. WANTED—.Remington 12, new model auto. Ray Welker, 406 N. Harvey, Oak Park, Ill. 9-30

EXTRA HI-GRADE .33-caliber muzzle-loader, 28 inch, No. 4 barrel, Winchester-Peter-son Schuetzen outfit, perfect, Peterson scope, mould, lubricator, every extra, powder measure, fancy walnut check-piece stock, \$125, or .22-caliber single-shot heavy barrel with scope for prone; 22 Tell pistol, 14½-inch, \$60; .50-100-450 Winchester light-weight tools, \$50; 22 S. & W. Peterson single-action 10-inch with extra Peterson barrel and fancy grips, excellent, \$60; .30-06 Belding & Mull Sporter, 3X Marksman scope, extra sights, scope case, like new, cost \$165, sell \$120; or trade. Leon C. Smith, 6645 Georgia Ave. N. W., Apt. 104, Washington, D. C. 9-30

SAVAGE .30-06 Super-Sporter, brand new, never shot, 100 cartridges, \$30; or will take out-board motor. Allen B. Conroy, Mill Valley, Calif. 9-30

WAFFENWERKE Oberspreew Kornbusch & Co. 1915 rifle, good, for best offer; also 9M Luger. WANTED—Violins, guns; or what? Chas. Pickel, Kingston, Tenn. 9-30

STEVENS .22 FAVORITE; Howard watch; auto. Grafex, 2 1/4 x 3 1/4; battery radio; Remington portable typewriter; portable phonograph. Frank Wilkinson, 82 Monticello, Buffalo, N. Y. 9-30

SAVAGE 99G .250; Savage 99F .300; Savage 99H .25-35; Remington Express .30-06; Remington 14, .30 and .35; Winchester .38-55 and .25-20; Remington 24, .22 L. R.; two 1897 Winchester, 12-gauge; Stevens repeater, 12-gauge; Stevens double .20; Crescent double .410; Springfield single .410; two Remington automatics, 12-gauge; 7.62 Russian; 32 Iver Johnson; 22 Colt Police Positive target; S. & W. .22-32; Corona portable No. 3, new. WANTED—.20-gauge Remington Automatic or pump; 12-gauge Browning No. 2, ventilated rib; Mirakel 8X binoculars; 32 or .35 S. & W. automatic pistol. P. N. Draxten, Box 71, Twin Valley, Minn. 9-30

PARKER V. H. DOUBLE 12, good, \$22; Ithaca No. 4 trap, \$45; Remington 12 automatic, good, \$35; Newton .30, Lyman No. 103, fine, \$35; heavy Springfield, International butt, palm rest, Lyman 48, fine, \$65; heavy Winchester S. R. .38-55, pitted, \$7. Several others. List for stamp. Orlen Royce, Seaside, Oreg. 9-30

LEFEVER SINGLE TRAP GUN, new; Winchester .25-20, Model 53, perfect. Very cheap for cash, or might trade for fine double 12-gauge. McCaslin, Centralia, Kans. 9-30

WANTED

WANTED—One Luger automatic 3- or 9-inch barrel, either or both barrels .765 caliber; also stocks for above, crank condition. T. S. Ford, Box 102, Utica, Miss. 9-30

ZEISS PRISM field glasses; want Deltrentis. Must be good, subject to examination. Will trade. J. A. Shaw, Dwyer, Wyo. 9-30

WANT—Kentucky rifle barrel and patch box. Harold Eastwood, Romeo, Mich. 9-30

WANT—Stevens No. 49, "Walnut Hill" Model with No. 44 1/2 C. F. action. Also .22-15-60 C. F. shells. Fred Smith, Middlebury, Vt. 9-30

WANTED—Complete year's Arms and The Man, AMERICAN RIFLEMAN. Elmer Eaton, Olney, Tex. 9-30

WE ARE endeavoring to create a library for the National Rifle Association. Rare books upon subjects pertaining to the rifle, pistol, revolver, and shotgun are desired. If you have one or more books which you are willing to donate for this purpose, write us, giving name of book and author.

WANTED—Colt or equivalent American cap-and-ball, muzzle-loading revolvers stamped as made by Samuel Colt Patent Firearms Mfg. Co., Paterson, N. J., or by other American makers. If you have any, write giving full descriptions, markings, condition of finish, and price. Will pay cash or trade for other antique arms, if preferred. McMurdo Silver, 6401 West 65th St., Chicago, Ill. 4-31

WANT—Certain American firearms made before 1876. You may have one or more I require. Please advise. S. H. Croft, "Collector," Cynwyd, Pa. 1-31

GIFTS of rifles, pistols, and revolvers are desired for display at the office of the National Rifle Association. History of the arm should be given, as duplicates are not wanted. The assistance of all shooters is solicited in order to make this collection the most unique in the country.

WANTED—Winchester 5A or good hunting scope. Must be cheap. Robt. Matthews, Box 1615, Asheville, N. C. 9-30

WANT—For cash only .22 long rifle with Stevens 44 1/2 action; also 44 1/2 and 44 action. Willard Stout, Hillsboro, Ohio. 9-30

WANT—Good used spotting scope. Albert M. Mitchell, Anthony, Kans. 9-30

BELL, "The Gunman," WANTS: Muzzle-loading gun parts or muzzle-loading guns in good condition. Flintlocks, percussion locks, and parts, trigger guards, patch boxes, butt plates, long barrels, used or new. Old gunsmithing tools, rifling guides, fiddle drills, cherries, carving and engraving tools. Dig—brother—dig! BELL, "The Gunman," Lewistown, Pa. 9-30

WANT—Smith & Wesson .38 Special, condition of barrel and cylinder immaterial, frame must be good. C. E. Stodter, Army Recruiting Office, Buffalo, N. Y. 9-30

TRADE

WINCHESTER S. S. .38-55 fancy p. g., absolutely perfect, for .22 or .25 single-shot, perfect. V. R. Olmstead, 429 Warburton Ave., Yonkers, N. Y. 9-30

HENSOLDT 8 x 24 binoculars, like new, for small Grafex or good 20-gauge double shotgun. Colon Raab, No. 4059, Batavia, N. Y. 9-30

LUGER 30, 6-inch, Remington Model 24, .22 L. R., like new, for Browning 16 or 16 double ejectors in like condition. H. E. Bolan, Irroquois, S. Dak. 9-30

.38 COLT S. A. 7 1/2 inch, gold bead, shoulder holster, for .410 double Lefever, Ithaca, or .38 Super; also .300 Savage, 99 takedown for .30-06, 95 model carbine. All perfect. WANT same. W. F. Sullenger, Talent, Oreg. 9-30

5 x 7 GRAFLEX, Bausch & Lomb lens, cost new over \$300. WANT—Springfield Sporter and Springfield .22 M1 with handmade stocks, in good condition. W. V. Blackwell, P. O. Box 311, Miami, Fla. 9-30

WILL TRADE standard .35 auto. rifle in fine condition for Springfield .30-06 Army rifle in good condition. R. W. Sprague, La Grange, Ind. 9-30

MAYTAG ENGINE 3/4 H. P. value \$25; Maytag 1 1/2 H. P. value \$15; Stenograph Duplicator, letter and post card size, value \$30; 35-volt generator, value \$35; several electric motors. WANT—Shotguns, rifles, revolvers, shells, cartridges, 8-gauge loading tools, Winchester scopes. N. P. Frayseth, Milan, Minn. 9-30

POLICE POSITIVE .22, new condition. TRADE for S. & W. M. & P. or Colt .38 Special. Otelio Ottman, Greenville, Ohio. 9-30

MISCELLANEOUS

TO THE MAN WHO LOVES HIS GUN: Year after year I used a certain anti-rust oil in my rifle barrels and in all that time not a trace of rust or a darkening of the steel has shown.

To get the opinion of others on this oil I sent samples to about all of the gun factories in the country for testing.

So many reports commending the oil were received that I have decided to put it out for sale at a price far lower than any other oil that I know of.

For \$1 I will mail postpaid a quart sample of this oil anywhere in the United States east of Ohio and north of North Carolina. Beyond these points the price will be \$1.35 per quart, postpaid. Yours for a clean gun, H. K. Verrell, Ridley Park, Pa. 9-30

QUIT TOBACCO—Steady your nerves: \$1 brings natural root. Campbell products, 3625 Whittier Bld., Los Angeles, Calif. 10-30

KRAG AND RUSSIAN RIFLES REMODELED—Cut off barrel, put on front sight, stock completely remodeled, \$6.50. Satisfaction guaranteed. S. H. Fryer, Jr., 209 Whittier St., Vandergrift, Pa. 10-30

OUTDOOR LIFE AND RECREATION combines in a single magazine the most popular features of two great publications—*Outdoor Life* and *Outdoor Recreation*. Published at Denver by John A. McGuire, the new combination is continuing the traditions of *Outdoor Life* and offering an even larger proportion of stories and articles on big-game hunting and rifle-shooting. The great Gun and Ammunition department is divided between Colonel Whelen, in charge of the Rifle and Pistol section, and Chas. Atkins, on the shotgun. The new magazine is considerably larger than either of the two publications which have been combined, and the increased space is permitting a far wider variety of gun and hunting material in every issue. The price of the new publication is twenty-five cents a copy, \$2.50 a year—the lowest price at which any outdoor magazine of equal size can be secured. As a special get-acquainted offer to readers of *THE AMERICAN RIFLEMAN*, a trial five issues will be sent for \$1. *Outdoor Life and Recreation*, 1802 Curtis St., Denver, Colo. 10-30

HUNTER-TRADER-TRAPPER—The largest magazine of its kind in the world. Devoted to hunting, fishing, trapping, camping, and every phase of outdoor life. Articles every month by the leading writers in their respective fields. Everything facts, no fiction. Send us \$1 for our special "Get-Acquainted" offer, consisting of five back issues and five coming issues as fast as they are off the press. Ten months for \$1. If you have never read H-T-T you are missing something. Send today. Hunter-Trader-Trapper, Subscription Department, Columbus, Ohio. 10-30

OLD ARMS RESTORED, repaired. Have done work for some of the best-known collectors and dealers for the past 15 years. The Hinckley Machine Works, Hinckley, Ill. 10-30

HAVE YOUR KRAG REBUILT. Krags, Russians, and Springfield rebuilt into sporters. Gun repairing, restocking, stocks refinished, checkering; prices reasonable. H. E. Henshaw, 7446 Monticello St., Pittsburgh, Pa. 10-30

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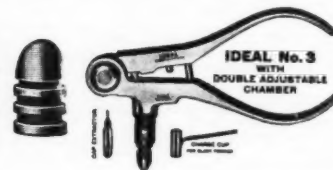
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Richard Dunlap of Tulsa, won the Small-Bore Palma Match in the 1930 Oklahoma State Rifle Championship meet at Okmulgee on June 8 with a score of 435 x 450, using a .22 caliber Springfield with iron sights and shooting U. S. N. R. A's.

The Palma Match is fired over a three-range course; at 150 yards, 175 yards, and 200 yards two sighters and fifteen shots for record at each range; on a 200-yard, 4-inch, ten-ring decimal target. His scores were:

150 yards.....	149
175 yards.....	145
200 yards.....	141
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“I am very well pleased with the performance of my ammunition,” was Dunlap's comment. “I can commend it as being consistent.”

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.22 N.R.A.
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NO. 6 OF A SERIES OF TALKS ON AMMUNITION QUALITY



INTERIOR VIEW OF A CONSTANT TEMPERATURE MAGAZINE

The Life of Smokeless Powders

THE life of a smokeless powder is determined not only by the stabilizing agents that are incorporated in its manufacture but also by the purity of the materials of which it is made. And while strict chemical control is exercised at the powder plant, it is also highly desirable to have some means of checking the life of a powder after it has been loaded and has reached the hands of the shooter.

In discussing the life of smokeless powder, it must be remembered that powder will not stand abuse any more than other every-day articles of common use. Wood rots under excessive moisture, woolen clothes must be protected from moths, and rubber deteriorates if exposed to sunlight or oil. So with smokeless powder—it must be protected by storage under normal atmospheric conditions.

At the Brandywine Laboratory there are a number of constant temperature magazines in which samples of every lot of the various du Pont powders are stored in bottles as shown in the illustration. This particular magazine is kept at 30° C. (86° F.) day in and day out. Every few years a portion of each sample is removed and subjected to storage at the very high temperature of 65.5° C. (150° F.) until the powder breaks down.

As an example of the resistance to decomposition of a high-grade nitrocellulose shotgun powder, consider the following record of Lot 1101 of du Pont Smokeless Shotgun

Powder which was made during the latter part of the year 1915, and placed in the 30° C. magazine on January 12, 1916.

Date of Test	Days the Powder withstood Decomposition at 65.5° C.
2- 8-16	1195 days
5- 7-19	820 days
2- 1-21	745 days
1-28-26	887 days

The balance of this fourteen-year-old sample is still held in the 30° C. and will again be subjected to the high temperature test at future periods even though it is most probable that all the ammunition loaded with this powder has been used over the traps or in the field several years ago.

Du Pont powders are used by all of the principal ammunition manufacturers. They have selected du Pont powders because their ballistic qualities contribute so largely to the superiority of the ammunition, and the consequent success of its users. To maintain these standards of excellence, the ammunition companies will continue to load those powders ensuring the best ammunition possible for a specified purpose.

The du Pont Company with its experience of 127 years and its present resources can supply to ammunition companies the type and quality of powders required to maintain the reputation of ammunition manufacturers and the confidence of the shooters.

E. I. du Pont de Nemours & Co., Inc., Smokeless Powder Department, Wilmington, Delaware



Smokeless Shotgun Powders

For Information on Target Shooting, Write to National Rifle Association, Barr Building, Washington, D. C.

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